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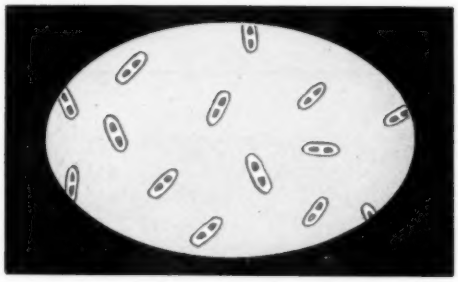

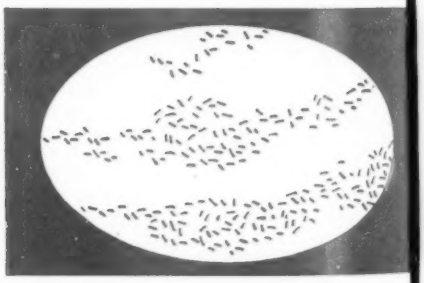

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# Minnesota Medicine

*Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society*

**Volume 36** **March, 1953** **Number 3**

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**Entered at the Post Office in Saint Paul as second class mail matter. Accepted for mailing at the special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized July 13, 1918.**

# MINNESOTA MEDICINE

OFFICIAL JOURNAL OF THE MINNESOTA STATE MEDICAL ASSOCIATION

*Published by the Association under the direction of its Editing and Publishing Committee*

Office of Minnesota State Medical Association,
496 Lowry Medical Arts Bldg., Saint Paul 2, Minnesota.



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Minnesota Medicine

*Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society*

Volume 36 March, 1953 Number 3

# AN APPROACH TOWARD THE IDEAL IN PARENTERAL NUTRITION

J. H. STRICKLER, M.D. and CARL O. RICE, M.D.

Minneapolis, Minnesota

IN ORDER that homeostasis be maintained when parenteral nutrition becomes necessary, it would seem reasonable that an artificial or parenteral food should supply elements resembling normal constituents as closely as possible. Such a solution has been prepared and it is the purpose of this paper to evaluate its effectiveness in terms of fluid, nitrogen, and electrolyte balance studies.

A solution of 12 per cent invert sugar, 6 per cent amino acids and 4 per cent alcohol constitutes 1,000 calories per liter and very closely approximates the average normal proportion of food substances in terms of calories as outlined by Best and Taylor[8] in that it contains 48 per cent carbohydrate, 24 per cent protein and 28 per cent fat substitute, or alcohol.

The calorie as a unit of energy may be figuratively considered as a matrix holding the food substances in balance. Many authors have exhibited concern over the absence of calories in present day parenteral nutrition.[10,9,55,41,23,59,57,36,19]

Fluid balance is related to proper nutritional intake.[7] The electrolyte problem is likewise complicated by inadequate caloric intake.[26,41,20,21,56,55]

In scrutinizing the numerous nitrogen balance studies, it is evident that the absence of a standard caloric intake inserts a very large variable that is not considered in most studies. This variable factor likely accounts for disparity in observations. Furthermore, the investigators who have striven for adequacy of caloric supplement have rather consistently achieved a positive nitrogen balance[23] even to the extent of denying the presence of the so-called catabolic impulse of trauma. A good many workers[9,2,5,55,10,17,14,46,56,22,41,60,44,12,36,34,15,16,20,38,19] have all conducted studies bearing upon or demonstrating the need for caloric protection of protein or amino acids.

W. C. Rose[53] found the normal male required forty-five calories per kilogram to obtain nitrogen equilibrium and that fifty-five calories per kilogram were needed to bring about a positive nitrogen balance. Increasing glucose intake also decreases ketone excretion in the urine.[61,42,18]

Glucose as a means of supplying calories has the limitation of producing glycosuria and diuresis when administered in higher concentrations. Fructose and invert sugar appear to considerably improve these limitations since fructose is more rapidly converted to liver glycogen, has considerably less urinary loss and less diuresis. Hydration[3] and nitrogen retention[1] appear to be better on fructose administration than glucose. More rapid utilization appears to be due to more rapid phosphorylation.[13,58] In spite of a low renal threshold for fructose, there is less urinary spillage than from glucose. This is apparently accounted for by the more rapid utilization of fructose.

Fat emulsions have been extensively studied.[55,22,38,15,39] The problems of pyrogenic and hemolytic reactions following storage have not as yet been solved.

Ethyl alcohol contains seven calories per gram, or 5.6 calories per cc. and must of necessity be burned for energy or excreted since alcohol cannot be stored by the body. Ten cc. of absolute alcohol per hour can be metabolized.[27] When

Presented before the Minneapolis Surgical Society as part of a Symposium on Fluid Balance and Related Problems in Surgical Patients, March 6, 1952.

alcohol and glucose are given together,[24] alcohol is apparently burned in preference. Several investigators[43,4,11,35,27,32,37] have noted the caloric advantages of alcohol and this protective influence upon the nitrogen balance has been demonstrated by nitrogen balance studies.[48,49,50,51]

One investigator found an increased gastric hydrochloric acid on intravenous alcohol,[40] but another[50] found an identical slight increase on any of several types of intravenous infusions.

It would appear that most all investigators agree that alcohol will not damage the liver if nutrition is adequate.[9,28,30,45,52]

Any parenteral nutrition and particularly a more complete supplement should be administered slowly in order that the circulatory system and fluid compartments not be loaded too quickly and that fluid and electrolyte shifts be not induced by rapid loading. Lusk[31] has demonstrated a reduction of specific dynamic action to zero by small, very frequent feedings of a balanced mixture of oral food. An efficient, practical method of administering a balanced parenteral nutrition is by means of a polyethylene plastic venous catheter as first described by Zimmerman.[62]

The solution under investigation in this study contains 1,000 calories per liter, in percentages, as indicated in Figure 1 and Table I.

By calculating the basal caloric requirement from DuBois chart and making sufficient addition (approximately 30 per cent) for bed activity and making addition for specific dynamic action requirement at 8 per cent and then adding 8 per cent more for each degree of temperature above normal, the metabolic requirement can be

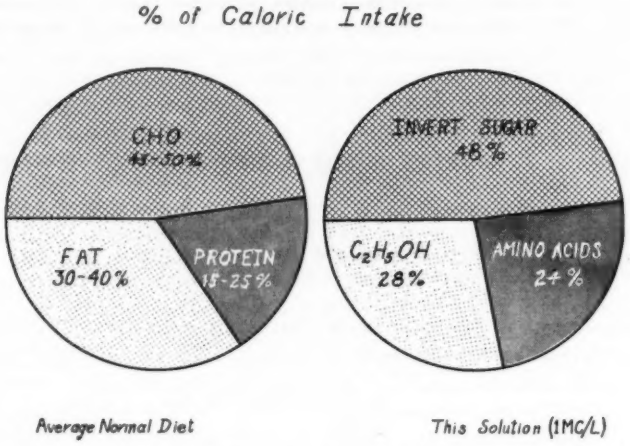


Fig. 1. Per cent of caloric intake.

TABLE I.
SOLUTION CONTAINING 1000 CALORIES PER LITER

| | Grams | Caloric Value | Proportion of Calories | |
|---|---|---|---|---|
| | | | This Solution 1M C/L | Ideal |
| Invert Sugar (Carbohydrate) | 120 gms. | 480 C | 48% | 45-50% |
| Amino Acids (Protein) | 60 gms. | 240 C | 24% | 15-25% |
| Alcohol (Fat Substitute) | 40 gms. | 280 C | 28% | 30-40% |
| $H_2O$ (Sufficient quantity) | 1000 cc. | | | |
| Total | | 1000 C | 100% | |

TABLE II. COMPARISON OF VARIOUS FLUIDS

| 2500 cc of Fluid | | | Caloric requirement 2500 |
|---|---|---|---|
| Glucose 5% | Gms. | Calories | Percent of Cal. |
| Glucose | 125 | 500 | 100% |
| Cal. Balance | | 20% | |
| 5% Glucose and 5% Amino Acids | | | |
| Glucose | 125 | 500 | 50% |
| Amino Acids | 125 | 500 | 50% |
| Cal. Balance | | 40% | |
| 5% Glucose, 5% Amino Acids, 5% Alcohol | | | |
| Glucose | 125 | 500 | 27% |
| Amino Acids | 125 | 500 | 27% |
| Alcohol | 125 | 875 | 46% |
| Cal. Balance | | 75% | |
| 1M C/L—Invert Sugar 12%, Amino Acids 6%, Alcohol 4% | | | |
| Invert Sugar | 300 | 1200 | 48% |
| Amino Acids | 150 | 600 | 24% |
| Alcohol | 100 | 700 | 28% |
| Cal. Balance | | 100% | |

calculated for each patient and his parenteral nutrition ordered accordingly.

In addition to meeting the average normal urine output of 1,000-1,500 cc. daily one should calculate and administer a quantity of fluid equivalent to the insensible loss. Darrow has established a method of calculating this loss by employing the factor of 44 cc. of insensible fluid loss per 100 calories metabolized by the individual. If one will then calculate the metabolic requirement in calories by the DeBois chart, it is then also possible to quickly calculate the insensible loss. For a normal individual it is readily seen that one must give about 1 cc. of fluid for each calorie metabolized. The converse is likely true that if one gives the optimal caloric nutrition, the ideal solution should contain 1 calorie per cc. or 1,000 calories per liter.

Table II demonstrates the comparison of various types of parenteral fluid administered at an intake level of 2,500 cc.

In the treatment of a surgical patient, particularly one who has gastrointestinal suction or fistulae losses, such losses must be calculated daily and added to the fluid intake. Likewise, additional fever demands greater fluid intake. It also introduces the requirement for a greater number of calories and thus, as both fluid and caloric requirements are increased, the proper fluid administration by the 1,000 calorie solution will, in the main, also meet the caloric demands of the patient.

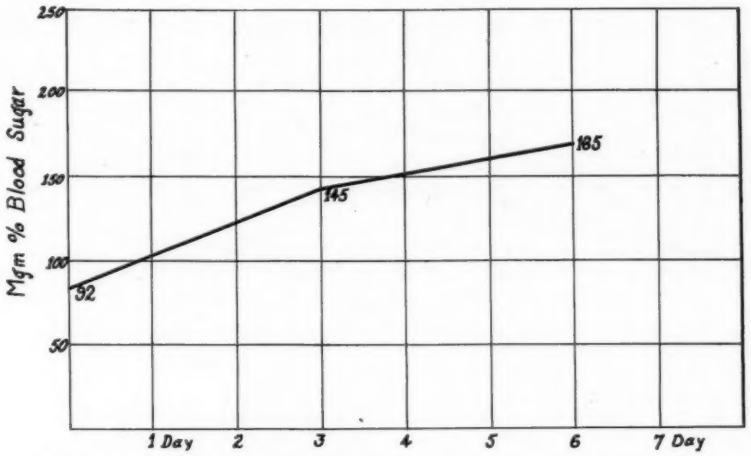


Fig. 2. Blood sugar elevation during continuous administration of a solution containing 1000 calories per liter (invert sugar, 12 per cent; amino acids, 6 per cent; alcohol, 5 per cent).

TABLE III.

Percentage Loss of Sugar in Urine—57 Cases 1M C/L

| Day | −4 | −3 | −2 | −1 | Day of Surgery | +1 | +2 | +3 | +4 |
|---|---|---|---|---|---|---|---|---|---|
| Per Cent | 3.9 | 4.6 | 4.7 | 4.6 | 9.2 | 6.7 | 6.5 | 5.2 | 6.4 |

Total Average Loss in 237 days (57 cases) Quantitative Urine Sugar = 5.96%

Since it is desirable to inject any parenteral alimentation slowly in order that the fluid load upon the circulation is not excessive and in order that the proffered constituents be fully utilized, and since a needle by the usual method would be impractical for a twenty-four-hour period, the desirable ideal is met by use of a polyethylene tube inserted through a No. 15 needle into the basilic vein of the antecubital fossa.

A continuous infusion of solution containing 1,000 calories per liter over several days of time has been followed by numerous methods of study to determine its effect upon the patient's physiologic processes.

Figure 2 demonstrates the effect upon the blood sugar level over the course of a six-day period during which time blood sugar levels have been taken while the intravenous administration is in progress.

Table III describes, in table form, the percentage loss of sugar in the urine during continuous administration of the 1,000 calories per liter solution. Attention may be called to the increase of urine sugar loss on and following the day of operation. This is likely due to the so-called temporary diabetes of trauma and in our opinion represents the standard response to stress.

The blood alcohol levels followed at varying speeds of injection are demonstrated in Figure 3. It may be noted that even though the alcohol administration rate is at a level of 20 cc. per hour a drunkenness level of .15 is not attained. A sedative level at .08 has however, been reached. If the usual rate of administration of the 1,000 calorie per liter solution containing 4 per cent alcohol and administered at a rate of 3,000 cc. in twenty-four hours, or a liter every eight hours, the rate would be roughly 6 cc. per hour, a rate which uniformly gives an almost negligible blood alcohol level. Since the average person can metabolize 10 cc. of absolute alcohol per hour without appreciably elevating the blood alcohol level, we would not anticipate any of the side effects of alcohol.

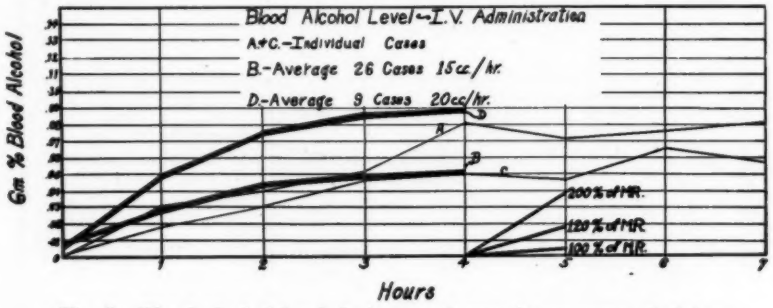


Fig. 3. Blood alcohol level during continuous intravenous administration of alcohol in saline.

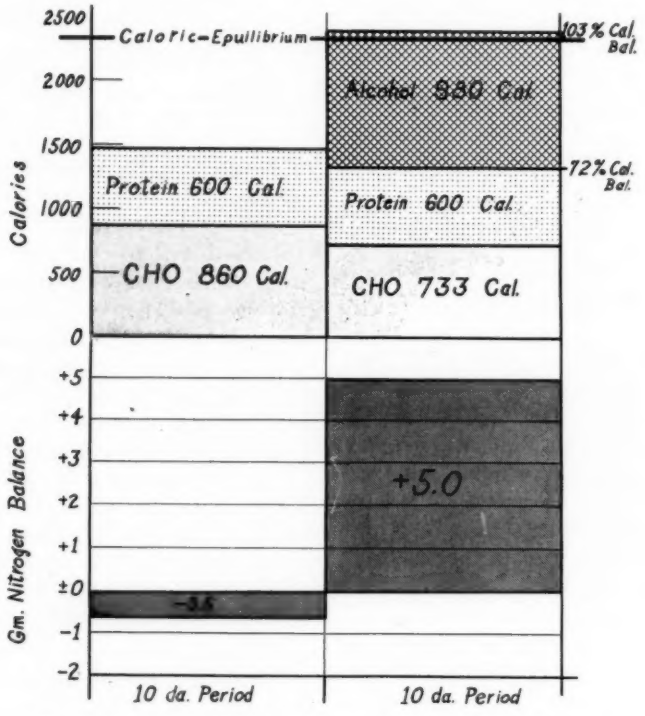


Fig. 4. Nitrogen balance as influenced by the addition of alcohol.

On the same Figure 3 can be seen another representation of the effects of alcohol administration in terms of metabolic requirements. It will be noted that if alcohol is given at the level of metabolic requirement, it will not exceed .01

gms. per cent level. It is only when the metabolic requirement is exceeded that the blood alcohol level will rise.

Since one of the prime purposes for the addition of alcohol and invert sugar to parenteral alimentation is to protect the amino acids from being burned as energy calories and making them available for tissue synthesis, it is therefore important that we scrutinize the influence of such additional calories upon the nitrogen balance. In Figure 4 it may be seen that the addition of alcohol calories brings the patient into caloric equilibrium and a positive nitrogen balance.

Variations in nitrogen balance were observed in many instances and were almost always explainable on the basis of the nitrogen or caloric intake in relation to the metabolic requirements of the patient. Analysis of 298 separate daily nitrogen balance studies revealed variations from time to time which could not be adequately explained until the caloric balance was also taken into consideration. Then when a constant nitrogen and caloric intake was maintained for several days as the patient's condition remained constant, a change in either the caloric or nitrogen intake in relation to the caloric requirement caused a change in the nitrogen balance. It is also evident in the following figure that when the patient was essentially in caloric equilibrium, no difficulty was encountered in obtaining a positive nitrogen balance with an average amount of nitrogen intake. On the other hand, when the patient was in negative caloric balance, he was also in negative nitrogen balance unless the nitrogen intake greatly exceeded the average normal allowance.

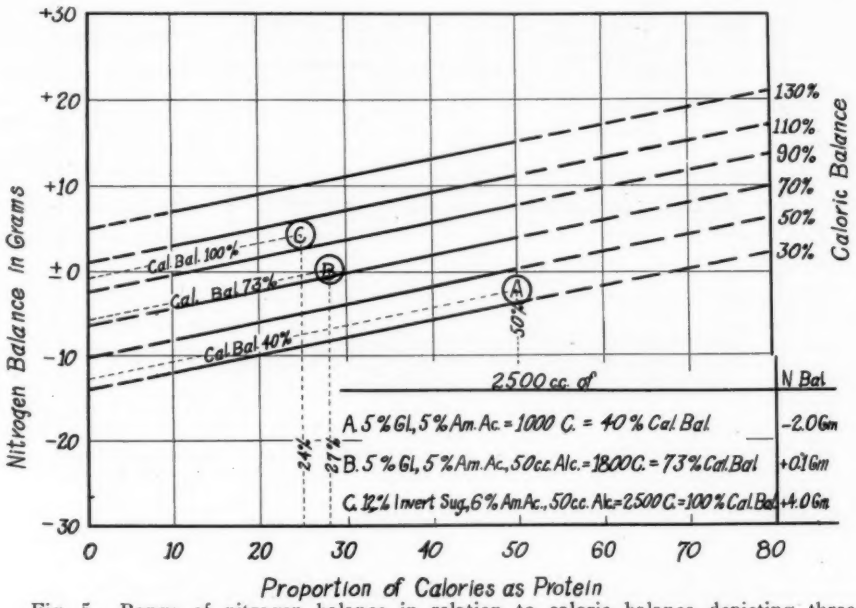


Fig. 5. Range of nitrogen balance in relation to caloric balance depicting three different parenteral solutions.

By a statistical analysis of three variable factors—caloric balance, nitrogen balance and percentage of protein calories—on a three dimensional association defined in terms of two variable scatters for a series of short limited range of the third variable, it thus became clear that the three variables were all intercorrelated. Figure 5 demonstrates this correlation in a graphic manner.

On the basis of 2,500 cc. of fluid with the percentage of caloric requirements derived from three separate solutions (5 per cent glucose in 5 per cent amino acids; 5 per cent glucose with 5 per cent amino acids and 5 per cent alcohol, and 12 per cent invert sugar, 6 per cent amino acids and 4 per cent alcohol). Figure 5 reveals the influence upon the nitrogen balance in terms of the usual normal fluid requirements. When represented in this way it may be seen that only

the 1,000 calories per liter solution can easily attain a positive nitrogen balance without exceeding the normal fluid intake.

Daily blood electrolyte determinations on patients receiving a constant infusion of 1,000 calories per liter solution reveal that a composite or group average fall well within the limits of normal values, thus indicating that a normal electrolyte pattern for homeostasis is maintained. The physiologic ideal is then more closely approached (Figs. 6 and 7).

A most natural inquiry would be, "Can this solution be tolerated by the tissues or in the blood stream at any point where it might infiltrate or meet the blood flow prior to dilution?" The pH of this solution is 5.55 and, although quite acid, has not caused undue reaction in the tissues when infiltrated out of the ordinary intravenous needle. The reaction might be classified as being halfway between that of 5 per cent and 10 per cent dextrose. A phlebitis has been produced but likely not as frequently as that of higher percentages of glucose. When introduced in the desired manner by way of a polyethylene catheter into an arm vein, the only reaction noted is from the polyethylene tube itself. This reaction at the site

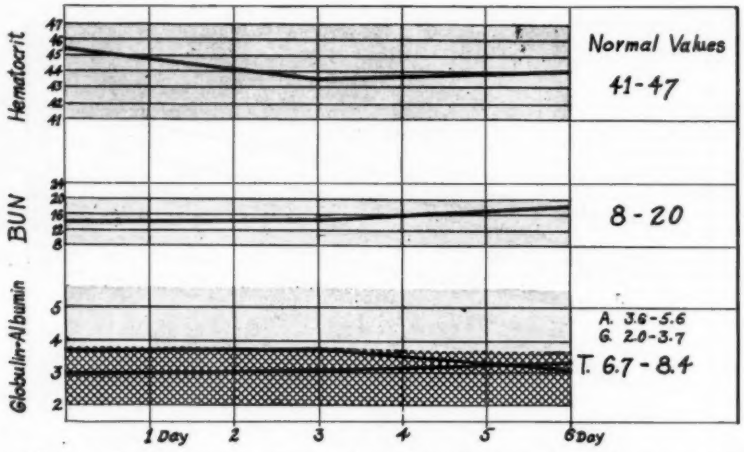


Fig. 6. Blood electrolyte status during administration of a solution containing 1000 calories per liter (invert sugar, 12 per cent; amino acids, 6 per cent; alcohol, 5 per cent).

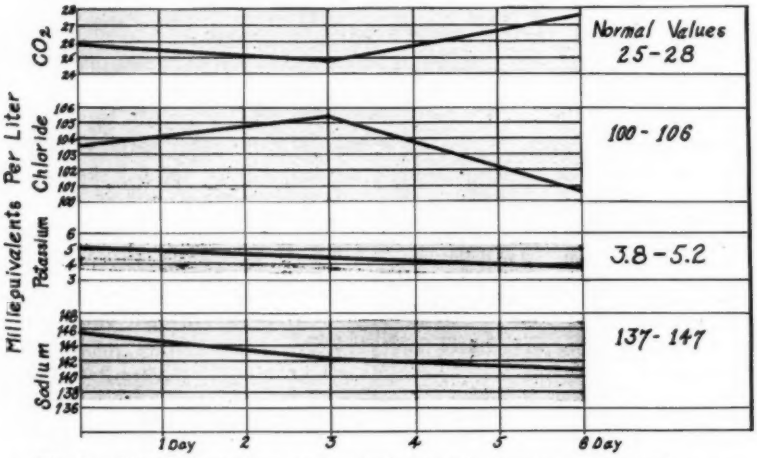


Fig. 7. Blood electrolyte status during administration of a solution containing 1000 calories per liter (invert sugar, 12 per cent; amino acids, 6 per cent; alcohol, 5 per cent).

of entrance of the tube and ascending phlebitis constitute somewhat of a problem which however does not outweigh the advantages of constant comfortable fluid administration. Cautious attention to technique of venous catheterization is apparently the answer to minimizing phlebitis. If the tube is changed to another vein at the earliest sign of phlebitis, then only a very minor reaction is caused.

In order that an assessment of the possible damaging effect upon blood cells at the point of mixture of the solution and blood could be made, an experiment was set up resembling that of the fragility test. Various solutions were compared (Fig. 8).

A final demonstration of the ability of proper and complete parenteral alimentation may be demonstrated from the Figure 9 representing the

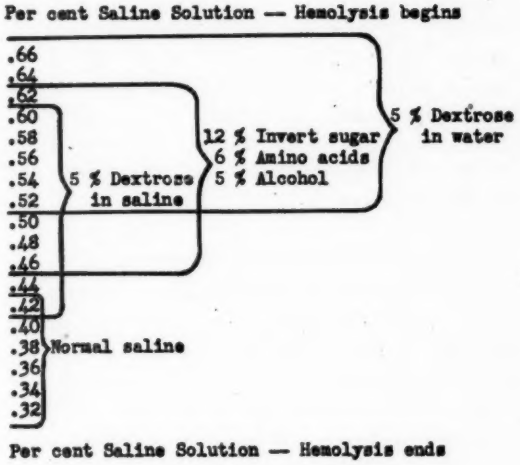


Fig. 8. Comparison of solutions.

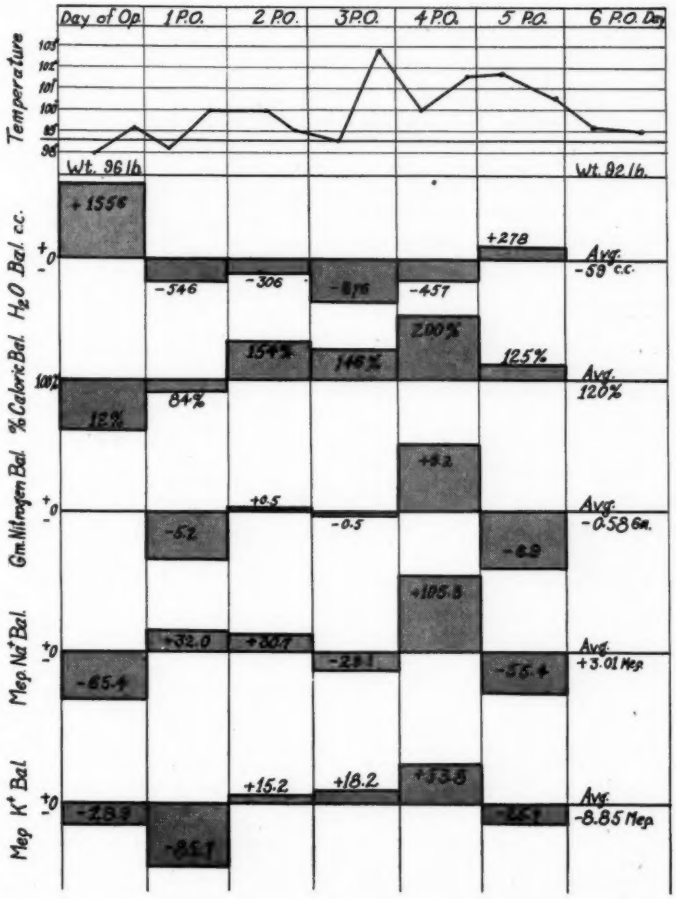


Fig. 9. Mrs. P. B., aged forty; carcinoma of ampulla of Vater; whipple resection.

postoperative course of a patient who had a Whipple resection for carcinoma of the ampulla of vater. It may be seen that almost all of her studies showed a nearly perfect balance and that her clinical course described by the fever chart and the ability to resume complete oral food intake by the sixth postoperative day, indicated rapid surgical recovery.

### Conclusions and Summary

1. A solution containing 12 per cent invert sugar, 6 per cent amino acids, 4 per cent alcohol furnishes 1,000 calories per liter and approaches the ideal proportion in terms of normal human intake of the various food substances.

2. Invert sugar can be used in greater concentration without producing as much hyperglycemia or glycosuria as is produced from equivalent percentage of glucose.

3. The blood alcohol elevation is almost negligible at the recommended infusion rate.

4. Additional evidence has been presented supporting the thesis that parenteral protein requires adequate caloric intake for optimal utilization of the amino acids.

5. Slow, continuous, around-the-clock infusion through plastic venous catheter affords best utilization of all constituents of parenteral alimentation.

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## MEDICAL SCHOOLS IN FINANCIAL NEED

American medical schools need an average of $250,000.00 more each year in order to do a really first-rate job, according to Dr. Ward Darley, president of the Association of American Medical Colleges and vice president and dean of the department of medicine at the University of Colorado.

Chief cause of the financial crisis, according to Dr. Darley, is the 500 per cent increase in operating costs of the medical schools over the past thirty years. Aside from the increased costs of educating medical students, the medical schools also are called upon to help in the instruction of many kinds of health personnel other than future doctors, furnish medical services to the community, and support extensive research activities in order to keep pace with the constantly advancing field of medical science.

Our changing economy also has a part in contributing to the difficulties of the schools, Dr. Darley says. Although in 1941, 35 per cent of the schools' income came from endowment interest, this percentage dropped to 20 per cent in 1948 despite a 21 per cent increase in endowment capital.

While not recommending any single course of action, Dr. Darley summarizes the various ways in which medical schools can brighten their financial picture. These include selling medical and hospital services, increasing community support for operation of teaching hospitals and clinics, recovering the actual costs involved in research programs, receiving larger city and state appropriations, soliciting more and larger gifts, grants and endowments, increasing tuition and, perhaps, accepting federal subsidy.

Dr. Darley noted that in reference to increasing tuition, charges are now an average $623 annually, an increase of 165 per cent since 1939. Increases in tuition will further overburden the financial resources of most students.

# THE DIAGNOSIS AND MANAGEMENT OF PERIPHERAL ARTERIAL EMBOLISM

JOHN L. KEELEY, M.D.
Chicago, Illinois

AN arterial embolus is a blood clot which usually arises in the heart and is carried peripherally by the blood stream to occlude a femoral artery. Although this is not true in all cases, Danzis[7] found it to be so in over half of 129 cases studied, and more recently Haimovici[16] in a study of 330 unselected cases of peripheral arterial emboli found the heart to be the source of the clot in 96 per cent and a lower extremity the site of lodgement in 84 per cent. Details of etiology, variations in behavior, other sites and degrees of arterial obstruction and, finally, management and prognosis form the basis of this article.

The various sites of origin have a bearing on the physical nature of emboli and are worth considering in detail. The unusual sites of origin and the unusual types of emboli will not be overlooked if the various segments and divisions of the circulation are considered in physiologic order. Paradoxical emboli are those arising from the peripheral venous system as a result of intravascular clotting or the liberation of a portion of a tumor but they can reach the arterial side only if there is a defect in the partition between the right and left heart chambers. Passage of emboli through interventricular septal defects and patent foramena ovale have been reported.[1,18,19,20,24,32] Emboli arising from the pulmonary circulation have been reported and include clot from an area of injured lung and portions of tumor swept away from either a primary[5,36] or metastatic[15] pulmonary lesion. A tumor embolus originating from a primary myxoma of the left ventricle causing occlusion of the renal arteries and the aortic bifurcation has been reported.[40]

Mural thrombi are the most common sources of emboli. In those arising from the left auricle rheumatic heart disease with mitral stenosis is usually present. Mural thrombi in the ventricles are more frequently found on the left and are associated with myocardial infarction in 90 per cent of the cases. Vegetations from the mitral valve in the course of subacute bacterial endocarditis more commonly cause visceral embolic disturbances rather than obstruction of a larger peripheral artery. Uncommonly an arteriosclerotic plaque from the wall of the aorta may become detached and be carried peripherally.

Association of heart disease and peripheral arterial embolization is frequent. McKechnie and Allen[30] found heart disease in forty-one of forty-six patients with peripheral arterial emboli; Willius[39] found emboli in 30 per cent of patients dying of mitral stenosis and cardiac failure; Garvin[12] found mural thrombi in thirty-seven of 116 autopsies in rheumatic heart disease. The heart was the source of the peripheral arterial emboli in 60 per cent of the cases in the extensive review of the literature in 1933 by Danzis,[7] in 50 per cent of the Cook County Hospital series reported by Koucky, Beck and Hoffman[25] in 1940 and in 88 per cent of the Massachusetts General Hospital series reported by Warren and Linton[38] in 1948.

Peripheral arterial embolization should be anticipated in all patients with history of signs of heart disease especially when there is a change in the status of the heart disease. Since small emboli may cause minor occlusions before a major vessel is blocked, premonitory signs such as a twinge of pain, a transient cramp, unexplained muscle soreness or ache, local changes in motor or sensory function of minor degree or changes in skin temperature may precede major embolic occlusion.

The onset of embolic occlusion is usually, but not always, characterized by sudden pain. The presence of pain depends upon the degree of narrowing of the major vessel, the amount of spasm caused, the state of the collateral circulation and the amount of muscle rendered ischemic. Cases have been reported in which complete occlusion of major vessels has occurred without pain (5.7 per cent in Haimovici's series). Occlusion is usually followed by the absence of pulsations and oscillometric excursions. The linear thrust of an occluded vessel due to the impact of the column of blood on the embolus is

*From the Department of Surgery, Stritch School of Medicine, Loyola University.
Presented at the Annual Meeting of the Duluth Surgical Society, Duluth, Minn., May 14, 1952.

called Nordentoft's sign and has frequently misled the examiner to conclude that the involved vessel was pulsating normally. The veins empty and sensory and motor paralysis soon follow. There is a drop in the skin temperature, marbling of the skin develops and muscle rigidity occurs in response to the ischemia.

The association of heart disease and peripheral emboli is so frequent that in the absence of auricular fibrillation, coronary occlusion or endocarditis, the diagnosis of pheripheral arterial embolus from a cardiac source must be made with great care.[38] One must then consider the unusual sources of emboli such as an aortic plaque, tumor embolus or paradoxical embolus. Foreign body emboli are rare. They are usually metallic and are related to recent trauma, most commonly gunfire. Accounts of their bizarre migrations are often fascinating.[23]

The differential diagnosis must include thrombophlebitis which often has a sudden onset and is accompanied by enough arterial spasm to render the peripheral pulses feeble so that their presence might be questioned. It occurs as a rule, however, under different circumstances afflicting more commonly patients already at bed rest from a medical illness or in post-partum or post-operative patients. The presence of edema, the lack of motor or sensory paralysis and the absence of demonstrable heart disease will usually suffice to make the distinction. Massive venous thrombosis may produce a picture locally in the extremity which may, for a time, closely simulate arterial occlusion.

Spontaneous thrombosis in a previously diseased and narrowed vessel may occur with such rapidity that embolization may be suspected. Consideration of the age of the patient, the absence of heart disease, the history suggesting gradually diminishing blood supply to the extremities and the physical signs associated with ischemia are the major points in the differentiation. Spontaneous thrombosis may occur in either arteriosclerotic peripheral vascular disease or in thromboangiitis obliterans. Some of the peripheral manifestations of dissecting aneurysm may suggest embolic occlusion but the mode of onset, the changing symptoms as the dissection progresses, and the late disturbance of pulse in either leg should be the basis for differentiation. A ruptured aneurysm of the abdominal aorta may interfere with pulsations in one leg. However, the associated collapse is usually more than is seen with uncomplicated embolic occlusion, and study of the peripheral blood will often suggest hemorrhage.

Very little has been written concerning embolism in infancy and childhood.[8,13] In patients with congenital heart disease sterile vegetations may form on the valves and in the cyanotic group the polycythemia is usually accompanied by increased clotting activity. A patent ductus is not considered an anomaly during the first year of life. However, clot can form in it and can break away from either end of the unobliterated channel. The clot which obliterates the umbilical arteries may extend into the iliac vessels and cause gangrene of an extremity. The diagnosis is, as a rule, difficult and usually is not made until there is obvious circulatory disturbance with marked physical signs. The treatment is conservative because the nature of the occluding mechanism is not always firmly established and because of the technical hazards of embolectomy in small vessels. The amazing capacity of the collateral circulation to provide adequate blood supply further justifies conservatism.

The management of patients in whom peripheral arterial embolism is suspected or in whom the diagnosis appears to be on a sound basis begins with a period of observation. Much can be accomplished during this time by careful evaluation of the general condition of the patient, careful consideration of the probable risk of operation and making arrangements for all the safeguards such as skillful anesthesia, capable assistants, appropriate instruments and materials, blood for transfusion and suitable provisions for the use of anticoagulant therapy. Embolectomy is an emergency procedure and from personal experience it may be said that most embolectomies will be done at odd hours when less experienced personnel are "on call." The surgeon must anticipate all of his needs prior to operation because in the final analysis he alone is held responsible for the clinical result.

In addition to allowing time for suitable preparation a period of observation will enable one to study the effect of antispasmodic treatment by drugs given systemically and by local anesthetic agents used in blocking the sympathetic pathways to the extremity. The response to antispasmodic therapy will enable one to select the cases in which operation is indicated. It will differentiate those conditions which are not embolic and it will dis-

close the true nature of those conditions in which a minor embolic occlusion has occurred but severe circulatory changes have been caused by superimposed vasospasm. The value of an observation period has been emphasized by Haimovici[16] and Veal and Dugan.[37] The latter authors point out that a good response to a sympathetic block should relieve pain, and restore color, temperature and function. If a good response is not obtained operation is performed. Veal and Dugan state that operation can be done before irreparable damage has occurred after a "safe period" of several hours. This seems quite reasonable since the chances of a successful embolectomy decrease rapidly after six hours.

The site of occlusion also furnishes some indication for the form of treatment; thus conservative management appears to be followed by the best results in the upper extremity. Lund[26] does not believe that operation for axillary or brachial emboli is beneficial. DeTakats[10] says it is seldom indicated, Veal and Dugan elect to treat their cases of upper extremity occlusion conservatively and Blum[5] states that embolic occlusion in the upper extremity runs a benign course. The collateral circulation about the shoulder joint is the greatest factor in maintaining adequate blood supply to the extremity but it can also be pointed out that the degree of circulatory impairment rarely is as marked in the upper extremity as it is in the lower even in the presence of generalized arterial disease. The poor results of embolectomy in the upper extremity may be related to the relatively smaller size of the vessel from which the clot is removed and the tendency for it to be narrowed by subsequent suture. Nevertheless, embolectomy in the upper extremity often stops the pain and may decrease spasm and avoid clotting by extension into the collateral vessels.

Emboli to the vessels of the lower extremity most commonly are arrested at the origin of the profundis femoris and therefore lend themselves to removal under local anesthetic by a femoral arteriotomy. If the clot is lodged in the iliac artery it may be fragmented by maneuvers with probes or by suction with a catheter introduced proximally through the opening in the vessel. The force of the blood proximal to the clot will sweep it into the section of vessel exposed. Care must be used to avoid permitting clot fragments to escape into the vessel distal to the arteriotomy. If one recalls the great tortuosity and calcification found on occasion in the iliac arteries, maneuvers to dislodge clot on these vessels by probing will be done with extreme care and caution.

In saddle embolus of the aorta the outlook without operation is so poor that embolectomy is almost universally accepted as the procedure of choice.[22] The cases in which survival has followed conservative therapy do not appear to be ones in which complete occlusion at the aortic bifurcation was present in previously normal vessels. Transitory arrest of a clot at the bifurcation followed by fragmentation or division of the clot resulting in bilateral iliac obstruction or iliac obstruction on one side and femoral on the other can be confused with saddle embolus. The prognosis in these situations is not the same since the level of gangrene is different. Collateral circulation developed in response to the gradual narrowing of the aorta in the region of the bifurcation may permit survival of an extremity following the complete and sudden occlusion of the remaining narrow lumen.

The general condition of the patient with a saddle embolus will determine the surgical approach and the anesthesia required. The abdominal approach is by far the most satisfactory and is usually made transperitoneally. This direct exposure appears to be more satisfactory for most surgeons although Murray[31] prefers an extraperitoneal route. It has a great advantage in aortic embolectomy in the presence of intraperitoneal sepsis as reported by Schmorell[33] and should be considered in patients with previous peritonitis in order to avoid extensive dissection of adhesions.

An indirect approach to an aortic embolus can be made through the femoral arteries in patients whose general condition does not justify an abdominal approach. Clot can be dislodged from the bifurcation by probing and the force of the blood stream will sweep the fragments distally to the site of the arteriotomy wound from which they can be recovered. Retroperitoneal milking as described by Nystrom has been attempted but this involves passing the hand retroperitoneally along the iliac vessels to the region of the bifurcation and then compressing the vessels while withdrawing the hand. It is difficult to see how this could be accomplished under local anesthesia.

The general principles of embolectomy are essentially the same for all vessels. There must be adequate exposure, control of bleeding from the

main vessel and from the collaterals, removal of all clot as shown by adequate flow of blood when the hemostatic tapes are released and re-establishment of pulses, color, warmth and function. There is usually no problem in dislodging clot proximal to the site of embolectomy and allowing the force of the blood stream to clear the main vessel. The problem is to recover the clot which is distal in the main vessel and in the collateral channels. A variety of maneuvers have been employed to accomplish removal of clot distal to the arteriotomy wound. They include the use of probes of many types, suction by means of a catheter and flushing the vessel with solution introduced at a more distal level. The possibility of retrograde milking of the collaterals and the distal portion of the main vessel was considered in a personal case some time ago and more recently was used with success in a case of femoral embolus.[21] The milking effect of a para rubber bandage wrapped tightly from the toes upward brought additional clot to the level of the arteriotomy wound through which it was recovered. It was our opinion that the recovery of the additional clot was responsible for the successful outcome.

The postoperative management must first of all take into consideration the patient's general condition and particularly his cardiac status. Often the patient is recovering or has recovered from an episode of decompensation when the embolus occurs and the stress of embolectomy may bring about decompensation again. Since the survival of the parts concerned depends on adequate oxygen, any improvement in the function of the heart will improve whatever peripheral circulation the condition of the vessels will permit. Likewise any improvement in the oxygen carrying power of the blood will be beneficial and red cell and hemoglobin values should be restored to normal levels by transfusion, due attention being paid to the burden transfusion may place on the cardiovascular system from a volume standpoint and the risk of a possible reaction.

Vasospasm may so limit the amount of blood reaching a part as to jeopardize the outcome of an embolectomy. Repeated lumbar or cervical sympathetic blocks are certainly in order and should be used as long as they appear to be beneficial. As a rule, the outcome of the case begins to be obvious within a few days and needless sympathetic blocks can be avoided. Early in the postoperative course when anticoagulant effect is still probably due principally to heparin the sympathetic blocks can be timed to coincide with lessened anticoagulant activity to avoid hematoma formation. Continuous sympathetic block by repeated infiltration of local anesthetic solutions through an arrangement similar to that used for continuous spinal anesthesia has been used.[35]

Effective anticoagulant therapy should be used in every embolectomy. It prevents reformation of clot at the arteriotomy site and propagation of clot from unrecovered distal fragments in either the main vessel or collaterals. Heparin should be injected through a fine needle directly into the involved vessel proximal to the arteriotomy site before the parietal wound is closed. Directing the needle distally will tend to make a valvelike puncture wound in the vessel. Subsequent anticoagulant therapy of heparin and dicoumarol or tromexan is used until the depression of prothrombin activity due to the longer acting agents is sufficient. If heparin is used in the form of a continuous drip intravenously care must be used to avoid overloading the circulation by two much fluid or salt. Wound hematomas may be troublesome on occasion but are not sufficient reason for omitting anticoagulant therapy.

Physical means to increase the circulation in an extremity may be used but it is difficult to estimate their value. Certainly no harm can come from using Berger's exercises if they do not tax the strength of the patient. The experimental evidence is inconclusive concerning the value of intermittent venous occlusion in increasing the blood supply to an extremity, yet there are many who feel that there is benefit from this adjunct in therapy. Other means to dilate the vessel such as alcohol in proper dosage and reflex vasodilatation by application of heat to other parts of the body may also be employed.

Sympathectomy has been employed as a rule for residual vasospasm but bilateral sympathectomy at the time of aortic embolectomy may be of value as suggested by Albright and Leonard.[2] Leriche seems to be the most prominent proponent of arteriectomy and offers the following indications for its use: poor general condition of the patient where speed is essential, badly damaged arterial wall, late cases (after twenty-four hours), and secondary thrombus formation after embolectomy. The arteriectomy removes an irritable

focus which has been described as a trigger point for spasm.

Recurrent and multiple emboli constitute a threat which fortunately is not frequently encountered. Deitch[9] in 1936 reported three embolectomies in the same patient. Groth[14] in 1939 found four of six re-embolectomies reported in the literature successful. McFarlane[28] in 1940 reported four successful embolectomies in the same patient and Scott and Williams[34] in 1949 reported three successful embolectomies in a patient with subacute bacterial endocarditis, an uncommon cause of larger peripheral emboli as a rule.

Recurrence of emboli and the constant threat of embolism in patients with fibrillation have prompted a medical and surgical prophylactic viewpoint. In 1946 Dock suggested that auricular resection be done in cases of recurrent embolization associated with rheumatic heart disease with mitral stenosis and auricular fibrillation. It has been shown experimentally in dogs.[6,17] that no disturbance followed this procedure and it has been used successfully in human beings by Madden,[29] Beal, Longmire and Leake[4] and by Baronofsky and Skinner,[3] but Leonard and Cogan[27] recently reported failure of the procedure in preventing recurrent embolization. This is readily understandable as the clots in rheumatic heart disease with mitral stenosis and fibrillation are not confined to the auricular appendage. It is too early to say whether the surgical procedure will be justified by the results and by the number of cases in which it is applicable.

The medical alternative is the restoration of normal rhythm, which may be impossible in a large majority of the patients, with the institution of prolonged anticoagulant therapy with dicoumarol or one of the newer therapeutic agents of that type.[11]

## Summary

A résumé of the sources, behavior and occlusive effects of peripheral arterial emboli is presented. The problems in diagnosis, the basis for choice of treatment and technical problems in management are discussed. Adjunct therapy after embolectomy is described and the problems of recurrent embolization are presented in the light of recent thought and practice.

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# A HISTOPLASMIN AND TUBERCULIN STUDY OF PSYCHIATRIC PATIENTS HAVING ABNORMAL CHEST ROENTGENOGRAMS

MILLARD A. TROXELL, M.D.
Saint Paul, Minnesota

DURING the last few years histoplasmosis has assumed increasing prominence in the differential diagnosis of many diseases. Outstanding among these is tuberculosis, together with the pathologic processes ordinarily considered in the differential diagnosis of tuberculosis. Since the relationship of tuberculosis to mental illness has long been recognized, even though the mechanism and degree of relationship remains unknown, it was considered appropriate to investigate a possible relationship between histoplasmosis and mental illness. The results of this study, although inconclusive, are suggestive of such a relationship; for this reason they are considered of sufficient interest for publication.

Early studies with histoplasmin skin tests have indicated an association between histoplasmin sensitivity and pulmonary calcification in tuberculin negative individuals.[4] More recent work has shown that pulmonary infiltrations resembling tuberculous infiltrations occur in these histoplasmin-positive, tuberculin-negative individuals.[5,7] Hilar lymphadenopathy was observed in histoplasmin positive, tuberculin negative infants but the infants had not been followed long enough to determine whether these lesions went on to calcification.[2] Two-thirds of seventy-two asymptomatic Kansas City school children showed nodular, sharply circumscribed foci, one-quarter showed diffuse patchy infiltrations, a few were limited to the lymph node, and a few were disseminated.[7] Cases of infected pulmonary cysts were pathologically diagnosed as histoplasmosis after lobotomy.[9] Schwartz and Spitz[20] mention the non-characteristic roentgenogram in the acute state of histoplasmosis but advise giving the diagnosis serious consideration in the presence of a disseminated pneumonitis. They explain cases showing complete resolution of the infiltrations as having been caused by relatively small doses of the infecting organism; the more intense inflammations supposedly result from greater doses of the infecting organism and take longer to heal, with resultant fibrosis and calcification. The calcification may be confined to the center of the lesion, producing a halo effect. Miliary and somewhat larger calcified nodules scattered diffusely throughout the lung fields strongly suggest the end stage of pulmonary histoplasmosis.[20]

Calcification was two to four times as frequent in histoplasmin positive University of Wisconsin students as in the tuberculin positive.[5] Iams[10] reviewed histoplasmin and tuberculin tests reported prior to his paper and summarized the relation of the tests to pulmonary calcification as follows: 13 per cent were histoplasmin and tuberculin positive; 69.5 per cent were histoplasmin positive and tuberculin negative; 5.3 per cent were histoplasmin negative and tuberculin positive; 12.1 per cent were histoplasmin and tuberculin negative. He quotes J. W. Johnson in a personal communication as finding 8 per cent positive reactors in five hundred tests done in Minneapolis. J. A. Myers of the School of Public Health at the University of Minnesota Medical School, informs me that histoplasmin tests have been routine on new students entering the University of Minnesota since 1947 and that an estimated 10 per cent are reactors. "Usually these students are from areas well to the south of us.[13]

However, in examining a study in student nurses[16] with particular regard to Minneapolis, 4.2 per cent of 2,419 were histoplasmin positive—3.6 per cent of these being tuberculin negative and 0.6 per cent tuberculin positive; 95.8 per cent were histoplasmin negative (a doubtful test is considered negative), 88.5 per cent being tuberculin negative and 7.3 per cent being tuberculin positive. Only sixty-three of the 2,419 had pulmonary calcification, with twenty-eight or 1.1 per cent having positive histoplasmin tests and thirty-one or 1.3 per cent having positive tuberculin tests. If the nine cases which were both histoplasmin and tuberculin positive are omitted, histoplasmosis *could* be suggested as the cause of the calcification in the nineteen (0.8 per cent) histoplasmin

A. L. Reichenberg, M.S., gave technical assistance in this study, which was performed in the Division of Research and Training, Hastings State Hospital, Hastings, Minnesota, Ralph Rossen, M.D., Superintendent.

Dr. Troxell is a medical fellow, the University of Minnesota, Division of Dermatology, H. E. Michelson, M.D., Director.

positive and tuberculin negative, and tuberculosis as the cause in the twenty-two (0.9 per cent) histoplasmin negative and tuberculin positive cases. This would seem to suggest tuberculosis and histoplasmosis as equally important causes of pulmonary calcification in this area.*

Other agents must not be ignored as causes of pulmonary calcification. Most non-tuberculous anergic patients usually have no symptoms at all in spite of roentgenograms that look alarming, and these patients are discharged from the sanatorium with the diagnosis of sarcoid disease, bronchiectasis, atypical pneumonia, tracheobronchial lymphadenitis, or one of the fungus infections.[23]

Nevertheless, the cause of abnormal chest roentgenograms should be established if possible, and the study herewith reported was undertaken with this in mind.

## Procedure

Exclusive of the receiving wards, the average patient population of the Hastings State Hospital is 900. Of these, 103 had abnormal chest roentgenographic findings. All patients tested had been under consideration as suspected cases of tuberculosis, on the basis of miniature film reports from the Minnesota State Health Department Division of Tuberculosis mass survey, and also from reports of chest films taken here. Repeated gastric lavages on these patients were negative except in the case of one histoplasmin negative and tuberculin positive patient discovered after the testing was done. He was immediately transferred, since no proven case of tuberculosis is allowed to remain at this institution.

For convenience the patients were tested in three working groups, the basis of selection being their ward of residence at the institution. Three different shipments of histoplasmin were used.** Three different shipments of tuberculin diluted 1:1000 were obtained from the Minnesota State Department of Health. In all cases the test material was used within two weeks of receipt. An amount of 0.1 cc. was injected intradermally into the volar forearm; in most cases the tests were done at the same time—the left forearm being tested with histoplasmin and the right with tuberculin. Immediately after skin testing, blood was drawn for complement fixation testing and was airmail shipped the same day. The author did all the skin testing and interpreting. The tests were interpreted forty-eight hours after testing by measuring two perpendicular diameters and recording the erythema, edema, and necrosis, if any. Then the degree of positivity was later calculated from the larger diameter according to accepted Minnesota Health Department standards for tuberculin test interpretation:

1 plus reaction—slight but definite edema not more than 10 mm. raised about 1 mm.
2 plus reaction—well defined edema 10-15 mm. in diameter raised somewhat more than 1 mm.
3 plus reaction—extensive edema more than 15 mm. in diameter and raised more than 2 mm. There might be some redness along a lymphatic, but no necrosis.
4 plus reaction—extensive edema, redness, and a spot of necrosis.

In accordance with well established precedent, a positive reaction to histoplasmin was not diagnosed unless the edema measured 5 mm. or over. Readings from the first working group were taken at forty-eight and also seventy-two hours, but no difference in the test readings was noted in those thirty patients. Consequently, tests were read only at forty-eight hours in the other two working groups.

## Results

Of the 103 patients tested, ninety-five were tuberculin positive and forty were histoplasmin positive. For analysis (Table I) the patients were divided into two groups: (1) histoplasmin positive, and (2) histoplasmin negative, to see if there were any essential difference in the two groups. Complement fixation tests for histoplasmosis were done at the Federal Security Agency Communicable Disease Center in Chamblee, Georgia, on sera drawn from all patients skin tested, and results were entirely negative. Complement fixation tests for blastomycosis and coccidioidomycosis were also done on sera from the first working group of thirty patients, and these were also completely negative.

For comparison, the roentgenographic findings of the seven patients who were tuberculin and histoplasmin negative are given: Four (57.2 per cent) showed apical densities; two (28.5 per cent)

*The Hastings State Hospital is approximately twenty-five miles southeast of the Twin Cities.
**Supplied on request by Dr. M. L. Furcolow.

showed apical fibrosis; and one (14.3 per cent) showed basal densities. The one patient who had a histoplasmin positive and a tuberculin negative reaction showed apical fibrosis with no calcification.

I would have preferred to find more histoplasmin positive, tuberculin negative patients, but this was not to be. In a way this is an advantage because nearly all (92 per cent) of the patients tested were tuberculin positive, and thus the patients could be divided into histoplasmin positive and histoplasmin negative groups with the factor of tuberculin sensitivity held constant, as it were.

The test results can be summarized as follows (Table I):

TABLE I.

| | Histoplasmin positive | Histoplasmin negative |
|---|---|---|
| Number of patients | 40 | 63 |
| Average age | 62 years | 61 years |
| Average length of hospitalization | 24 years | 23 years |
| **Psychiatric Diagnosis** | | |
| Schizophrenia | 24 60.0% | 35 55.5% |
| Manic-Depressive | 3 7.5% | 11 17.4% |
| Psychosis with Psychopathic Personality | 2 5.0% | 1 1.6% |
| Senile Psychosis | 4 10.0% | 6 9.5% |
| Paresis | 4 10.0% | 2 3.2% |
| Involutional Melancholia | 2 5.0% | 0 0.0% |
| Organic Psychosis | 0 0.0% | 2 3.2% |
| Psychosis with Mental Deficiency | 0 0.0% | 3 4.8% |
| Alcoholic Psychosis | 0 0.0% | 1 1.6% |
| Undiagnosed | 1 2.5% | 2 3.2% |
| **Main Roentgoenographic Finding** | | |
| Apical densities | 9 22.5% | 28 44.5% |
| Nodular | 2 5.0% | 3 4.8% |
| Mottled | 1 2.5% | 1 1.6% |
| Soft | 1 2.5% | 1 1.6% |
| Not specified | 5 12.5% | 23 36.5% |
| Apical fibrosis | 19 47.5% | 13 20.6% |
| Without calcification | 12 30.0% | 12 19.0% |
| With calcification | 7 17.5% | 1 1.6% |
| Apical infiltration | 2 5.0% | 1 1.6% |
| Pleural thickening | 5 12.5% | 3 4.8% |
| Hilar calcification | 2 5.0% | 7 11.1% |
| Basal densities | 3 7.5% | 11 17.4% |
| Calcification (Apical and Hilar) | 9 22.5% | 8 12.7% |
| **Reaction of Tuberculin Tests** | | |
| 4 plus | 20 50.0% | 20 31.8% |
| 3 plus | 12 30.0% | 18 28.6% |
| 2 plus | 6 15.0% | 14 22.2% |
| 1 plus | 1 2.5% | 4 6.3% |
| Negative | 1 2.5% | 7 11.1% |
| **Reaction of Histoplasmin Tests** | | |
| 4 plus | 1 2.5% | |
| 3 plus | 2 5.0% | |
| 2 plus | 10 25.0% | |
| 1 plus | 27 67.5% | |
| **Comparison of Tuberculin and Histoplasmin Reactions** | | |
| Tuberculin more than Histoplasmin | 34 85.0% | |
| Tuberculin equal to Histoplasmin | 3 7.5% | |
| Tuberculin less than Histoplasmin | 2 5.0% | |
| Tuberculin negative; Histoplasmin 1 plus | 1 2.5% | |

1. The average age and length of hospitalization of the two groups were nearly identical.

2. There was little difference in the psychiatric diagnoses, with the exception of a greater incidence of histoplasmin sensitivity in the paretics and a greater incidence of histoplasmin negativity in the manic depressives. No significance is attached to these findings.

3. Of the forty positive histoplasmin tests only one (2.5 per cent) was four plus, and only two (5.0 per cent) were three plus.

4. The incidence of apical densities in the histoplasmin positive group was only half that of the histoplasmin negative group. On the other hand, the incidence of apical fibrosis in the histoplasmin positive group was over twice that of the histoplasmin negative group. The histoplasmin positive group showed twice the incidence of pulmonary calcifications as compared to the histoplasmin negative group. However, six of the seven "anergic" patients showed apical densities or fibrosis.

5. There was a greater incidence of four plus tuberculin reactions in the patients who reacted to histoplasmin than in the patients who did not.

6. The tuberculin skin test showed a more intense reaction in thirty-four (85 per cent) of the patients who reacted to both test materials.

7. Histoplasmin complement fixation tests on all 103 patients were negative.

## Discussion

No reference to a numerical gradation of the histoplasmin test was found in the literature reviewed. A complicated system using capital letters of the alphabet has been used.[16] However, Keeney,[11] states that the histoplasmin skin test is performed by injecting 0.1 cc. of a 1:1000 dilution of Histoplasma capsulatum broth filtrate and is interpreted in the same manner as the tuberculin test. Hence, grading histoplasmin tests into one, two, three, and four plus seems logical.

It is extremely difficult to evaluate the mass of histoplasmin tests reported in the literature. Many different lots and dilutions of histoplasmin have been used. The reader is referred to an article by Shaw et al[21] for further information.

Considerable doubt has been raised regarding the usefulness of the histoplasmin test. Olson, Bell and Emmons[15] state that the histoplasmin skin test is not specific for histoplasmosis in animals and no evidence has been found that the reaction is specific for histoplasmosis in humans. These conclusions are based on histoplasmin tests in guinea pigs, rabbits and man. Prior et al[17] state "in the many thousands of histoplasmin tests applied to man in this country very few have actually detected histoplasmosis. For this reason many doubt the diagnostic value of the histoplasmin skin test." They regard the test in dogs in a more favorable light, however, since only five of 837 tested were positive and three of the five were proved to have active, naturally occurring histoplasmosis. All three had failed to react to tuberculin. Emmons et al[6] reported positive histoplasmin reactions in animals experimentally infected with blastomycosis, coccidioidomycosis and haplosporangiosis, but Christie and Peterson[3] concluded that the cross reactions noted by Emmons are not seen in humans. Saslaw and Prior[18] conservatively note that a positive skin test may serve to include the disease in the differential diagnosis but there may be no skin reaction in fulminating or disseminated disease. This seems a sensible interpretation of the problem.

The complement fixation test does not seem to be much greater help in attempting to find the cause of persistent pulmonary infiltrations and calcifications. Complement fixation and collodion agglutination tests are usually of value in the early acute phase of the disease.[18] Saslaw and Campbell[19] found strong agglutination between histoplasmin sensitized collodion particles and sera from all of three patients in the acute phase of histoplasmosis but the titre of the serum was appreciably decreased after two months of the disease and three chronic cases showed a lack of significant circulating antibodies. According to the authors there was implicated a transient type of antibody response to Histoplasma capsulatum following infection. The same authors,[1] using ground yeast phase antigens of Histoplasma capsulatum, found that sera from three acute cases fixed complement in high titre while sera from three chronic cases did not vary appreciably from titres found in a small percentage (viz. 5.9 to 7.7 per cent) of a normal population. However, Furcolow, Bunnell, and Tenenberg[8] used histoplasmin as antigen and found that the fourteen positive complement fixation tests among 300 human sera tested all belonged in a small group of fifty-eight persons. Nine of these were definitely proved cases, thirteen had recently acquired histoplasmin skin sensitivity, and thirty-six had unhealed lung lesions "characteristic of those associated with histoplasmin skin sensitivity."

The tuberculin test also deserves discussion. The 1:10,000 dilution has been widely used. Since the 1:1,000 dilution is in common use, it would seem that the use of the weaker preparation would merely increase the number of tuberculin negative patients. If these patients tested histoplasmin positive, erroneous conclusions could be reached. Indeed—Woodruff[23] mentions that in 1,376 patients admitted to a sanatorium because of roentgenographic or other findings suggestive of tuberculosis—1,302 or 94.7 per cent reacted to 1:1,000, 1:10,000, or 1:100,000 dilutions of tuberculin, and 1,125 or 86.4 per cent reacted to 1:10,000 or 1:100,000 dilutions. Hence 8.3 per cent more patients were tuberculin positive when tested with the 1:1,000 dilution. On the other hand, only 5 per cent of the patients were "anergic"—either because they were critically ill with tuberculosis or because they did not have tuberculosis at all. Woodruff would have obtained over two and one-half times the number of tuberculin negative patients by testing only with tuberculin diluted 1:10,000 or 1:100,000. I have come to believe that many of the "histoplasmin positive, tuberculin negative" patients reported as such are not truly tuberculin negative, and use Woodruff's statistics to add weight to this

statement. Furthermore, Weissfeiler[22] concludes that tuberculous infection is accompanied by an increased sensitivity to non-specific antigens as well as to various components of the tuberculosis bacillus. This mechanism *could* account for some of the histoplasmin positives.

The relationship between tuberculosis and mental illness has been long recognized. Fifty-three references on this relationship were mentioned in the publication by Nolan Lewis,[12] and these references include only the years 1922 to 1935! Oechsli[14] mentions a higher incidence (7.5 per cent) of tuberculosis in patients with dementia praecox as compared to the incidence of tuberculosis (4.8 per cent) in patients with other psychiatric diagnoses in California mental institutions. He ascribes this to the longer periods of residence of patients with dementia praecox, with consequent greater opportunity to acquire tuberculosis. In contrast, the incidence in recently admitted patients was 1.6 per cent, or about the incidence observed in the California general population.

Because of the difficulties in distinguishing findings due to histoplasmosis and tuberculosis on pulmonary roentgenograms, and with the widespread distribution of histoplasmosis now being reported, a similar increased incidence of histoplasmosis could be expected in mental institutions. It was not possible to test all 900 patients at Hastings State Hospital, but forty reactors in the 103 patients tested (38.9 per cent) is a vastly greater incidence over that previously found in this area.

## Conclusions

1. Neither the histoplasmin skin test nor the histoplasmosis complement fixation test has helped establish the cause of "suspicious" pulmonary roentgenograms in the 10 per cent of our patients who have them.

2. Caution is recommended in assuming patients to be tuberculin negative unless they are tested with the 1:1,000 dilution of tuberculin.

3. There may be an increased incidence of histoplasmin reactors among patients at state mental institutions. Thirty-nine per cent of patients tested were positive, as opposed to incidences of 4 to 10 per cent previously found in this immediate area.

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# NEUROSYPHILIS

ROBERT R. KIERLAND, M.D.
Rochester, Minnesota

TREMENDOUS advances have taken place in syphilotherapy in the past twenty years. These range from the seemingly endless courses of arsenicals, bismuth, mercury, iodides with or without fever in the form of malarial therapy, Kettering hyperthermy, typhoid vaccine, hot baths and blankets, and even other supplemental types of treatment such as Swift-Ellis therapy or one of its modifications, to the present-day therapy with penicillin.

In spite of the great simplicity and efficacy of therapy with penicillin, and in spite of the great reduction in the number of patients with all forms of syphilis, the patient himself remains the same and has the same signs and symptoms that he would have had if he had been seen twenty or thirty years ago.

The diagnosis of neurosyphilis, of course, depends on the history, complete physical examination, including a neurologic examination, and on confirmation by a serologic test for syphilis and examination of the cerebrospinal fluid. The exception to this may be seen in cases of arrested locomotor ataxia in which the results of a serologic test for syphilis and examination of the cerebrospinal fluid may be normal, but in such cases thorough neurologic examination will point out the diagnosis. Thorough examination is necessary because patients who have been thought to have arrested locomotor ataxia later have been found to have Adie's syndrome or pseudotabes of diabetes.

In the short time available for this presentation, it is impossible to speak of neurologic examination further or to discuss the classification of neurosyphilis extensively.

There is almost no limit to the many manifestations that may be due to neurosyphilis. The pathologic changes are both inflammatory and degenerative, and the type of neurosyphilis encountered depends upon which change is present, whether or not there are combinations of both, and the site of involvement within the central nervous system.

The Co-operative Clinic Group a number of years ago classified neurosyphilis, and the following classification is a minor modification of the one by this group.

I. Asymptomatic neurosyphilis.
II. Acute meningeal neurosyphilis.
III. Meningovascular neurosyphilis.
IV. Vascular neurosyphilis.
V. Locomotor ataxia (tabes dorsalis) with or without optic atrophy.
VI. Dementia paralytica (general paresis).
VII. Taboparesis.
VIII. Rare types of neurosyphilis.
  A. Gumma of brain or spinal cord.
  B. Syphilitic epilepsy without paresis.
  C. Erb's spastic paraplegia.
  D. Eighth-nerve deafness.
  E. Primary optic atrophy.

The absolute certainty that a few of these conditions are due to syphilis is sometimes remote in any individual case and may depend upon a therapeutic trial or even necropsy, for, in certain cases, that is, in cases of vascular neurosyphilis, epilepsy, gumma of brain or spinal cord, eighth-nerve deafness or optic atrophy without locomotor ataxia, the cerebrospinal fluid may be normal. Nevertheless, the diagnosis of active neurosyphilis usually cannot be made without the demonstration of abnormal changes in the cerebrospinal fluid. The previously mentioned exceptions should be noted. These abnormal changes in the cerebrospinal fluid in order of importance are: (1) increased cell count, (2) increased concentration of protein, (3) positive serologic reaction for syphilis and (4) abnormal result of the colloidal gold test.

The cell count is usually the first abnormality seen and is the finding of greatest value in determining response to treatment, for the trend toward normal appears rapidly. The opinions of laboratory workers and syphilologists differ as to what the upper limit of normal is. It usually is

From the Section of Dermatology and Syphilology, Mayo Clinic, Rochester, Minnesota.
Read at the meeting of the American Academy of Dermatology and Syphilology, Chicago, Illinois, December 6-11, 1952.

considered to be between five and seven lymphocytes per cubic millimeter without any polymorphonuclear leukocytes.

The values for protein again vary slightly from laboratory to laboratory, but values up to 35 to 40 mg. per 100 cc. may be considered normal. The values for protein are increased early in cases of active neurosyphilis, and after treatment is started they usually begin to revert to normal shortly after the cell count does. Occasionally, and without known reason, the values for protein may remain elevated for a long time, even when other tests show a steady significant trend or even a return to normal.

The positive result of a serologic test for syphilis, which preferably should be a complement-fixation test, which is confirmatory of a diagnosis of neurosyphilis, occasionally may be the first abnormality found in the cerebrospinal fluid although such a positive reaction usually follows abnormalities of the cell count and values for protein. After treatment, the quantitative complement-fixation reaction usually decreases in titer but only becomes negative months or even years after the values for the protein and cell count have reverted to normal, even in cases in which the response to treatment is favorable.

The result of the colloidal test, which now in most laboratories is known as the "colloidal gold test," also exhibits abnormalities, but the type of reaction does not always indicate the type of neurosyphilis encountered clinically. The result of this test, like the result of the complement-fixation reaction, very slowly reverts to normal after treatment is started. Peculiarly, in cases in which patients were treated with aureomycin at the Mayo Clinic, which I shall mention later, the result of the colloidal gold test exhibited a far more rapid reversion to normal than in cases in which patients were treated by penicillin or other methods.

The response of these tests to treatment has been the subject of interest and investigation by syphilologists for many years, and from these investigations has come the frequently called Dattner-Thomas concept which states that the results of cerebrospinal-fluid tests accurately reflect the activity of a syphilitic process in the central nervous system. This concept of cerebrospinal-fluid findings in cases of neurosyphilis has been summarized as follows by Thomas:

"1. Signs and symptoms of neurosyphilis are not reliable criteria of the activity of a syphilitic process in the central nervous system, because they may persist or become more marked as a result of past activity, or there may be transitory clinical improvement without a complete arrest of the syphilitic process as shown by spinal fluid findings. Also, the syphilitic infection may be very active within the central nervous system and still be asymptomatic.

"2. A positive spinal-fluid Wassermann test alone is not proof of active neurosyphilis. It merely indicates the specific nature of the infection, which may be already inhibited or completely checked at the time when the spinal fluid is examined. Activity is demonstrated only by the entire spectrum of spinal-fluid tests, among which increased cell counts and total protein determinations are of chief importance. Colloidal reactions are important but less informative than cell counts and protein determinations.

"3. In treated cases, spinal-fluid Wassermann tests and colloidal reactions may continue positive for more than five years after treatment has successfully arrested the syphilitic process. In an arrested case, cell counts should become normal within three to four months after treatment, and quantitative complement-fixation tests, protein values, and colloidal reactions should show a gradual but steady trend toward normal.

"4. Following malaria therapy or penicillin therapy of active neurosyphilis, the spinal-fluid findings may show a trend toward normal values, only to relapse later. Relapses however, rarely occur more than one year after therapy, and at Bellevue Hospital we have never observed a relapse of neurosyphilis more than fifteen months after treatment. If the cell count is not normal and there is no definite improvement in the other spinal-fluid findings six months after treatment, further treatment is imperative, regardless of the clinical status of the patient."

Few rules for the treatment of syphilis are without exception, and at the clinic we have seen but few exceptions to those which have been mentioned. We, therefore, feel, as do most investigators, that the concept of Thomas is valid. Since we have seen cell counts which were abnormal six months or more following treatment become normal without further treatment, we do not feel necessarily that further treatment is imperative,

and we also have seen neurosyphilis relapse more than fifteen months after treatment with penicillin or malaria, or both.

The treatment of active neurosyphilis is now relatively simple, inexpensive and nontoxic. It consists almost without exception of the administration of penicillin. A few years ago, many of us thought that penicillin combined with malarial therapy was the treatment of choice, but it now appears that penicillin alone will accomplish as much. There are many schedules for the administration of penicillin. However, most authors[2] believe that a total dose of at least 6,000,000 units given over a period of at least ten days is adequate therapy at least for a first course. There are many variations of this schedule, for example, 600,000 units of penicillin may be administered daily for ten days, 300,000 units may be administered daily for twenty days, or 600,000 units of penicillin with 2 per cent aluminum monostearate may be administered daily, every other day, twice a week, or even less frequently.

If a test for syphilis is performed on the serum, the result of the test is of no value in determining the response of a neurosyphilitic patient to therapy. As indicated previously, the cerebrospinal fluid should be examined four to six months after the completion of the course of treatment. If the increased cell count has reverted to normal or nearly normal, if the value for the protein has decreased, and if the patient shows evidence of improvement, further treatment is not necessary. At the end of four to six months, the result of the complement-fixation reaction usually is less strongly positive than it was previously, and there may be only a slight change in the result of the colloidal gold test. Although there may be little change in the results of these tests at this time, further treatment may not be necessary. If, however, the cell count and the value for the protein remain high, the patient should receive another course of treatment with penicillin. This course should be the same as, or more intensive than the previous one.

In cases in which the response is favorable, the cerebrospinal fluid should be examined at intervals of four to six months during the first year after treatment, and then yearly until examination of the cerebrospinal fluid no longer discloses any abnormality.

It should be noted that absence of clinical evidence of improvement does not indicate that treatment has been ineffective. Irreparable injury of the nervous system may have taken place before treatment was instituted. Hence, the presence of subjective and objective signs may continue in spite of the fact that active syphilis no longer exists. On the other hand, there may be considerable clinical improvement in spite of a continuing active syphilitic process. This explains the necessity for repeated examination and continued observation of neurosyphilitic patients.

Fortunately, a patient only rarely needs further treatment after he has received two courses of treatment with penicillin. If further treatment is necessary, one should consider the advisability of using fever therapy, especially malarial therapy, or of administering one of the other antibiotics such as aureomycin.

In certain cases in which the patients are highly susceptible to penicillin, serum sickness, urticaria, eczematous eruptions and even exfoliative dermatitis may develop. In cases in which the history reveals that patients are highly susceptible to the administration of penicillin, and in cases in which its administration is followed by a reaction, one of the hypoallergenic preparations of penicillin may be used or one of the other antibiotics may be administered orally.

At the clinic, we have treated a considerable number of neurosyphilitic patients by administering aureomycin orally, and they have responded satisfactorily and to the same degree as other patients who have been treated with penicillin.[12] Other antibiotics such as terramycin and chloramphenicol also have merit, although chloramphenicol has been shown to produce hematopoietic suppression.

We have been able to continue observation on all but two of the patients who were given aureomycin and on whom we reported results previously.[9] In all of these cases, there has been a continued and rapid improvement in the condition of the cerebrospinal fluid. In one case in which a relapse occurred a second course of treatment with aureomycin produced satisfactory progress.

Clinical improvement noted early after treatment with aureomycin has continued although less rapidly. The greatest degree of clinical benefit appeared within the first six to ten months after treatment was begun. In no case of asymptomatic neurosyphilis has symptomatic neurosyphilis developed. All patients with symptomatic neurosyphilis with but one exception have shown

moderate to marked degrees of clinical benefit in their specific syphilitic symptoms. In addition, there have been the general tonic effects noted as well in penicillin-treated patients; that of gain of weight and an increased sense of well-being.

While the dosage of aureomycin has varied considerably, it appears that approximately 60 gm. of aureomycin, with 2 to 4 gm. given daily in divided doses, is sufficient for a single or first course of therapy.

In cases in which the administration of aureomycin caused nausea, anorexia, and other gastrointestinal symptoms, a reduction of the daily dose often permitted continuation of the medication with comfort. Photosensitivity occurred in two cases.

From these further observations, we have concluded: (1) that results of aureomycin therapy of neurosyphilis are equivalent to those achieved with penicillin, and (2) that aureomycin is available for those cases of neurosyphilis in which the patients are hypersensitive to penicillin or the disease is resistant to this antibiotic.

Although a partial answer to the fundamental question, "What does the treatment of neurosyphilis accomplish?" is contained in much of the foregoing, this question cannot be answered completely. It seems safe to say that present-day methods of therapy of asymptomatic neurosyphilis will almost completely prevent the development of symptomatic neurosyphilis. In this respect, results may be considered almost 100 per cent satisfactory. Hence, the imperative need for the prompt suspicion and evaluation of any type of neurosyphilis.

The results of treatment of symptomatic neurosyphilis and the prognosis of the patient with this disease cannot be foretold in any individual case. These depend on the type of neurosyphilis present, the results of examination of the cerebrospinal fluid, and above all, on the amount of irreversible organic damage produced before antisyphilitic therapy is begun.

Dattner and associates[4,5] reported the results of treatment with penicillin in 388 cases of neurosyphilis. Only three of the 388 patients failed to exhibit evidence of improvement after they had received repeated courses of treatment with penicillin. Peculiarly, all of these three patients had asymptomatic neurosyphilis. In cases in which repeated courses of treatment with penicillin fail to produce evidence of improvement, another antibiotic should be administered or fever therapy should be employed.

Administration of penicillin alone or in conjunction with malarial therapy failed to produce clinical evidence of improvement in only twenty-two (6 per cent) of 380 cases reported by Curtis, Kruse and Norton. These authors said that patients who have neurosyphilis including paresis respond equally well to the administration of penicillin alone or in conjunction with malarial therapy. This opinion agrees with that of several other authors.[7,10,11] Controversy still exists, however, regarding the relative merits of penicillin when administered alone and in conjunction with fever therapy. Epstein and Allen expressed the opinion that its administration in conjunction with fever therapy produces better results.

Johnwick has demonstrated that the results obtained by the administration of mapharsen (oxyphenarsine hydrochloride) and bismuth subsalicylate in combination are no better than the results obtained by the administration of penicillin alone.

Persons who are particularly interested in this subject should read the detailed review by Beerman, Ford, Nicholas, and Katzenstein.

## Conclusions

Although the results of treatment of symptomatic neurosyphilis cannot be stated dogmatically, the following conclusions appear to be warranted:

1. Administration of penicillin is the treatment of choice.
2. Fever therapy may be administered in conjunction with penicillin in certain cases, particularly in cases in which optic atrophy or severe paresis is present.
3. Other antibiotics may be used in unusual cases in which the disease does not respond to the administration of penicillin.
4. The present method of treating neurosyphilis with antibiotics is cheaper, safer, more rapid, less toxic and more effective than the older methods.

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# PUBLIC HEALTH SERVICE IN MINNESOTA

CHARLES G. SHEPPARD, M.D.
Hutchinson, Minnesota

FIRST of all, I should like to welcome all of you who are here tonight at our sixth annual meeting. I am sure that all of you who attended this afternoon's session, on care of the aged, have benefited greatly. The problems that lie before us in this and other public health fields are extremely challenging, and deserve our best efforts.

Secondly, I should like to take this opportunity to thank all those members of the various committees of the conference for their efforts during this past year. The growth of our organization has been slow but steady, indicating that the foundation is on firm ground. Our programs have been sufficiently varied and timely to attract the interest of those engaged in public health work, should they take the time to study the program and attend the sessions offered them. I am encouraged by the entrance into our conference of people in so many allied fields of public health work.

Last year's president, Dr. Viktor Wilson of Rochester, Minnesota, put the question, "Where do we go from here in relation to public health in Minnesota?" Dr. Wilson very fully reviewed the situation as it exists in Minnesota at the present time, and gave special emphasis to the full time public health services in Minnesota as they now are, and as he would like to see them expand in the future.

It is recognized that public health services in Minnesota are not adequate. A partial correction has been offered by an enabling act which will allow the levying of a tax to provide for local public health services in city-county, or multi-county units. The amount provided for under this law is not sufficient to provide the services that we would like to see developed.

What are some of the things that can be done to improve public health service? Bring about a change in the law to allow for more adequate financing by governmental agencies that desire such public health units to be developed. Create a greater interest in public health problems in Minnesota. This must be done by constant education of the public to the point where they are willing to expend funds for this purpose.

Who are those who are doing the educating at the present time? Public health nurses, doctors who serve as full or part time health officers, dentists, veterinarians, and groups of interested lay people. Public health activities are better directed in any community by someone who has a knowledge of public health. A great deal could be done by an interested health officer. Many of our health officers are not interested as is attested to by the fact that so few of them attend these Minnesota Public Health Conferences, either to learn or to contribute something in the promotion of better community health.

Doctors must be community leaders and each group of physicians in a community should be given the opportunity of suggesting to their city council the name of one of their group who expresses the greatest interest in public health matters as the one they would like to see as health officer. This individual should then be reappointed in this capacity year after year as long as he desires to do the work, and as long as his job is done well.

There are a great many communities that have only one doctor in the community and of necessity he must be the medical health officer. If the doctor does not happen to have an interest in public health matters, the community will suffer accordingly.

In Minnesota there are 137 communities with one doctor only. If the community is fortunate enough to have that man interested in public health, his services will be relatively good even on a part time basis. If he has no interest in public health nothing will be done. There are eighty communities where there are two doctors, and the chances are that one of them will have a greater interest in public health than the other and thus should be allowed to be the health officer as long as he will serve. There are 158 communities of three or more doctors, and there again the suggestion would be in order to let the doctors select their own health officer from their own group and let him serve year after year, to more

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Presidential address before the Minnesota Public Health Conference, Saint Paul, Minnesota, October 2, 1952.

adequately assure continually improving public health services.

Many communities to my knowledge rotate the health officer position amongst all the physicians in that community, having each man hold office for a year. He may have no interest in the work and do nothing, or a great deal of interest and have insufficient tenure of office to accomplish improvements that he may plan. One cannot do a great deal in a one year term as a part time health officer, as I know from personal experience with these problems.

It will be years before the public is educated to the point of demanding local health units, as outlined by Dr. Haven Emerson. This is the ultimate goal, but in the meantime something else must be done.

I propose that this conference, working with such organizations as the Minnesota League of Municipalities and the Minnesota State Medical Association, promote the idea to city and village governing bodies of more careful selection of health officers and longer tenure of office as a step toward improvement of community health.

There would be much greater education in public health in each community and consequently a demonstration of the need for more adequate public health services. I would also like to suggest to the new president of the public health conference that a legislative committee be appointed to try to bring about the necessary change in the permissive legislation which was passed two years ago to establish local full time health units in Minnesota. I think if this committee could work in conjunction with a similar committee in the Minnesota Medical Association such change might be brought about in this coming legislature. This would logically be a part of the work of the already appointed committee on local public health services.

I should like to suggest the appointment of a committee of health officers to work with the executive officers of the League of Municipalities in order to try to bring about such a change in the method of appointing health officers in our communities.

I should also like to report briefly on the recent hearing held in Minneapolis, in the auditorium of the North American Life and Casualty Company. This was a hearing on the Health Needs of the Nation conducted by two members of a commission appointed by President Truman. Members of this commission who were present at the hearing were Miss Marian Sheahan of New York, and Dr. Dean Clark, of Boston, Mass. Some of you were present at this hearing, and testified for your particular group. I do not know what your impressions of this hearing were, but I should like to give you my own. I question the need of having such a commission, and the commission was given much too short a time in which to perform its function.

The commission members gave each group too little time in which to prepare a statement which would adequately tell of health needs in the various states in this section, to say nothing of time to develop suggestions for improvements in the health of our people. Each individual who testified for his organization was given exactly ten minutes in which to speak, and there were altogether too many who testified in that one day to be very constructive. A great many groups were represented at this meeting. There were spokesmen for certain farm organizations, certain labor unions, co-operative health organizations as well as the various professions associated with the practice of medicine. Representatives of many large groups, such as the Farm Bureau, refused to testify, feeling that the necessary information was already available.

Most of these groups were given exactly eight to ten days in which to prepare a statement to be given at this hearing. Certainly on a subject as important and with as many ramifications as the Health Needs of the Nation, ten days was a very inadequate period of time to come up with anything really constructive in the way of suggested improvements to say nothing of a mere description of what our health needs actually are. I think, too, that the hearing came at a most unfortunate time, that is, during a political campaign. My own impression was that not too much in the way of constructive suggestions were made, and that the possible lack of such constructive suggestions might be used politically to the disadvantage of those engaged in dealing in public health services in the country. I believe that because of the inadequacy of the testimony it will be pointed out that nobody is doing anything about real public health improvements in this country with the idea of promoting the socialization of medicine. In other words these hearings will show to those who are conducting them that there is a great need for expansion of the federal hand into health affairs

in this country, because it may be pointed out that we have made few constructive suggestions as to how to solve these problems. It is definitely my feeling that if this commission had been given more time and the hearing had been conducted in a different manner and at a different time that something other than more ammunition for the socializers might have come out of it. The known socialist ideals of some of those conducting the hearings probably means that their conclusions were drawn before the hearings were held.

I believe with Dr. Roger Kennedy, president of the Minnesota State Medical Association, who said at his appearance before the sectional meeting of The President's Commission on Health Needs of the Nation held in Minneapolis in September:

"There is really no situation existing in the health of the nation today that warrants this type of survey—especially one which is conceived in such a rapid and haphazard manner, and through which one cannot possibly hope to acquire an accurate picture of possible existing health needs, meager as they have been proved to be."

"We believe that the health needs of the nation are not overwhelming, that they are being solved by the continued efforts of men of medicine and related fields who are free to practice and work without interference and control, that future problems in this field will be solved most completely and most satisfactorily through medical practice which remains free to continue its earnest quest for even better health for all people."

I believe that it behooves any organization which deals with private or public health to do its utmost to prevent the inroads of federal controls upon the health of our people, and accordingly have presented a resolution which was passed at this afternoon's business session. I sincerely hope that this organization, and all others like it in this country, will continue to oppose the ever increasing socialistic trend in our time, to the end that we here in Minnesota as in all other states, may study our own health needs and solve our own problems. There have been times where federal assistance and advice were necessary, and this will undoubtedly continue, but let us use our own ingenuity and resources whenever possible in an effort to stem the mounting tide of federal paternalism.

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## NEUROSYPHILIS

*(Continued from Page 243)*


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# MANAGEMENT OF PATIENTS WITH TRAUMA OF THE CHEST

NATHAN K. JENSEN, M.D.

Minneapolis, Minnesota

PHYSIOLOGICAL considerations have led to the division of chest injuries into penetrating and non-penetrating, depending upon whether the parietal pleura has been disrupted by an object traversing the full thickness of the chest wall. Penetrating wounds are further subdivided into open and closed types. Open penetrating wounds result in a vicarious airway through the chest wall into the pleural space and the production of a sucking wound. Closed penetrations do not cause sufficient defect in the chest wall to produce sucking wounds but are frequently followed by pneumothorax and hemothorax, the blood most often coming from the chest wall and the air from a rupture of the lung.

Non-penetrating chest injuries vary in severity from superficial abrasions to massive crushing injuries causing instant death from rupture of the heart or great vessels. In many, although the skin has not been disrupted, sharp rib fragments have traversed the parietal pleura and lacerated the lung, and we have the same hazards of hemothorax and pneumothorax as beset closed penetrations. One great difference between penetrating and non-penetrating thoracic injuries is the hazard of bacterial contamination associated with the penetrating wounds. Modern antibiotics have significantly diminished this distinction, and empyema is no longer greatly feared in open thoracic wounds.

Many of the other formerly hazardous complications of thoracic injury have become easily managed problems with our better understanding of their physiological facets and the ease and safety of modern thoracotomy. Pneumothorax is quickly and easily handled by inserting a catheter through an interspace and sucking out the intrapleural air by motor suction of sufficient volume to stay ahead of the leak in the lung and thus re-establish negative intrapleural pressure. Re-expansion of the lung will bring the leaking visceral tear into contact with the parietal pleura and its adherence here promptly seals it off.

Hemothorax is best aspirated early and should be aspirated completely and as soon as possible before clotting can occur. The old fear of reactivation of bleeding by re-expansion of the lung is unfounded as a lacerated lung is seldom the cause of extensive hemothorax, and where it is, once the bleeding has stopped, it will remain so due to the low pulmonary blood pressure. Persistent bleeding is from torn systemic arteries, usually the intercostals, and may require thoracotomy and ligation. Clotted hemothoraces are easily evacuated by thoracotomy, and decortication of the lung allows its re-expansion.

Severe crushing injuries of the chest, however, present problems not so readily solved. The disruption of the structural stability of the thoracic cage by multiple rib fractures often makes adequate pulmonary ventilation impossible. Contusion of the lung adds further difficulties, and cardiac contusion may result in serious arrhythmias. An understanding of the nature of the physiological disturbances associated with crushing injuries points the way, however, to their successful management.

Acute pulmonary edema of some degree occurs in these injuries. Even though no ribs are fractured, as may occur in a young person with flexible ribs, severe contusion will produce almost immediate massive pulmonary edema. The exact mechanism of this phenomenon is unknown, but it is probably related to anoxia and the resultant pulmonary hypertension. Drinker has shown that the easiest and quickest way to produce pulmonary edema in dogs is by anoxia, and recently Cournand has demonstrated that anoxia results in significant increase in pulmonary blood pressure in normal adult males. Dr. Newell Wood, working at the Minneapolis Veterans Hospital, has demonstrated a marked reduction in oxygen absorption by the lung on the side of a single rib fracture even though its ventilation remains normal. Apparently as a result of even minor chest injury perfusion of the lung is reduced with concomitant diminished gaseous exchange; anoxia and hypercarbia follow with pulmonary hypertension and edema.

Read at the annual meeting of the Minnesota State Medical Association, Minneapolis, Minnesota, May 26, 1952.

The treatment of traumatic wet lung is adequate oxygenation. If normal ventilation is possible, oxygen alone will suffice. If pain is immobilizing the chest, its relief by local procaine block may be required. Frequently the serous exudation into the lungs will be so great that tracheobronchial catheter aspiration will be necessary before adequate airway can be re-established, and coughing must be stimulated to continue the airway toilet.

Crushing injuries producing a flail chest wall present a more difficult problem. In addition to the wet lung, we now have a chest wall that sucks in on inspiration and bulges out on expiration and so is said to be moving paradoxically. The patient now sucks his chest wall in and out of the thoracic cage rather than air in and out of his lungs. Tidal air is sharply reduced and coughing is impossible. Traumatic wet lung is also present, and pleural complications of hemothorax or pneumothorax may be expected. If the pulmonary injury is severe, hemorrhage into the lung with loss of alveolar tissue to respiration and bronchial obstruction by clots further impedes ventilation. This patient may be salvaged by stabilization of the chest wall and the re-establishment of adequate ventilation. If the chest wall injury is not too extensive, is unilateral, and the contralateral lung is uninjured, firm circumferential strapping will stop the paradoxical motion, allow effective diaphragmatic ventilation, and permit good coughing. Pleural complications must be effectively handled and the compressed lung fully re-expanded. A clear airway must be promptly obtained either by effective coughing or catheter aspiration of the tracheobronchial tree and this maintained.

Extensive unilateral crushing injuries of the chest and bilateral injuries cannot be stabilized by strapping. We have tried lateral traction attached to multiple ribs and discarded it. Tracheotomy with oxygen delivered under slight positive pressure during all phases of respiration will stabilize these chests. This accomplishes two things. The tracheotomy reduces the dead air space of the nose, mouth, and pharynx and allows better alveolar ventilation. Positive pressure oxygen delivered through this tracheotomy tube during expiration washes out the alveolar air delivered into the airway above the tracheotomy tube and, thus, completely eliminates this as dead air space, and oxygen delivered through the tube at positive pressure during inspiration prevents the intrathoracic pressure from falling below atmospheric pressure during inspiration.

The lungs and thorax, having inherent elasticity, can be ventilated very well, just the same as a balloon, without the help of a single rib if the air need not be sucked in, or, in other words, if intrathoracic pressure need not fall below atmospheric pressure for air to enter the lungs.

The tracheotomy also provides an easily available port for aspiration of the tracheobronchial tree, and since it makes high intrapulmonary gas pressures impossible, as in straining or coughing, it hastens the closure of air leaks from tears in the lung. Because of this a tracheotomy will promptly control a spreading subcutaneous or mediastinal emphysema.

Occasionally, multiple anterior bilateral rib fractures or costochondral separations will leave the sternum floating. It then sucks in on inspiration and bulges forward on expiration. This is easily stabilized by traction. A Parham band may be placed beneath it and attached to pulley-weight overhead traction of about 4 pounds for an adult, or it may be grasped by tongs and traction applied. Towel clips inserted into the cartilages are painful.

The aim in every chest injury is the prompt re-establishment of adequate ventilation. Oxygen is essential to support life till this is accomplished, but a patient must also eliminate carbon dioxide, and if dyspneic or hyperpneic though pink, exchange is inadequate and respiratory acidosis is present. Quiet respiration on room air with good color and effective cough is the goal.

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## SUPPLEMENT TO MOTION PICTURE REVIEWS AVAILABLE

The Committee on Medical Motion Pictures of the AMA has completed the fourth supplement to the booklet entitled "Reviews of Medical Motion Pictures." It contains all the film reviews published in *The Journal* from January to December, 1952.

One copy has been mailed to the secretary of each state medical society. Copies are available to county medical societies on request from: Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn Street, Chicago 10.

# CHRONIC PHARYNGEAL AND LARYNGEAL HISTOPLASMOSIS SUCCESSFULLY TREATED WITH ETHYL VANILLATE

## A Case Report

HORACE H. ZINNEMAN, M.D., and WENDELL H. HALL, M.D.
Minneapolis, Minnesota

ONLY eighteen probable or proved cases of histoplasmosis, originating in Minnesota, have been reported to the Minnesota Department of Health since 1926. Six of these cases were reported in 1950 in MINNESOTA MEDICINE as an unusual type of pulmonary disease involving six members of a family at Detroit Lakes.[22] Subsequently, all of the six were found to have histoplasmin skin sensitivity as well as serum complement-fixing antibody. Moreover, *Histoplasma capsulatum* was cultured from the dust of the basement of their home.*

The present report deals with a case of histoplasmosis which appears notable because of its chronicity, the histologic proof of the diagnosis and the successful therapy with ethyl vanillate.

### Case Report

A forty-two-year-old white machine operator noted the gradual onset of hoarseness in the spring of 1950. Local therapy with tincture of iodine was of no avail, and by September, 1950, he became increasingly short of breath. A choking spell necessitated an emergency tracheotomy. Following the operation, his voice began to improve and was almost normal by the spring of 1951. Very gradually he again became hoarse and by February, 1952, his voice had diminished to a whisper. He also noted intermittent episodes of fever. He lost 25 pounds of weight and encountered considerable difficulty in swallowing because of soreness of his throat. He had lived in or around Duluth, Minnesota, all his life except during World War II. From 1943 to 1944 he saw action as a soldier in North Africa and Italy. His past history was otherwise irrelevant.

The patient was afebrile, alert, but poorly nourished, weighing 128 pounds, and unable to speak above a whisper. Externally the head and neck showed nothing of note. There was generalized swelling and reddening of the mucosa of the hard palate, maxillary gingiva, tonsillar pillars, uvula and the posterior pharyngeal wall. The mucosa was granular in appearance and of spongy consistency. There was no ulceration. Similar lesions also were noted in the larynx; the vocal cords were greatly swollen, granular and covered with a dirty grey exudate. The heart and lungs were not remarkable; the blood pressure was 95/70 mm. Hg. The liver, spleen and kidneys could not be palpated. The rectal examination was negative. There were no skin lesions.

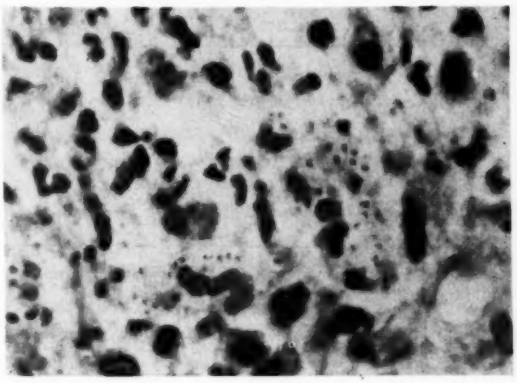

Fig. 1. Biopsy specimen from the hard palate stained with hematoxylin-eosin, showing submucous tissue filled with chronic inflammatory cells and including several macrophages with intracytoplasmatic yeast cells having a distinct clear capsule. Microphotograph, magnification ×396.5.

*Laboratory Data.*—The initial urine was not remarkable. The hemoglobin was 14.1 gm./100 cc., and the leukocyte count was 4000/c.mm. with 58 per cent neutrophils, 34 per cent lymphocytes, 3 per cent monocytes, 3 per cent eosinophils and 2 per cent basophils. The erythrocyte sedimentation rate was 38 mm./hr. The total proteins measured 8.1 gm./100 cc. with an albumin fraction of 3.1 gm. and globulin 5.0 gm. The globulin fraction was composed of alpha globulins 1.5 gm., beta globulins 1.4 gm. and gamma globulins 2.1 gm./100 cc. Liver and kidney function tests were normal. Sputum cultures were negative for acid-fast organisms and fungi. The spinal fluid was normal. A sternal bone marrow biopsy presented one isolated nonspecific granuloma. Two of four biopsies of the mucous membrane of the palate and pharynx revealed the characteristic histologic picture of histoplasmosis (Fig. 1). The lesions showed masses of chronic inflammatory cells with occasional giant cells of the Langhans type. A few foci of macrophages with many intracytoplasmatic capsulated yeast cells, presenting a double-contoured capsule, were seen immediately beneath the epithelium.** The

From the Veterans Administration Hospital, Minneapolis, Minnesota, and the Department of Medicine, University of Minnesota Medical School.

Reviewed by the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are the result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

*Information obtained from Dr. C. B. Nelson, Minnesota Department of Health, Minneapolis.

**Histologic diagnosis and description by Drs. E. T. Bell and D. F. Gleason.

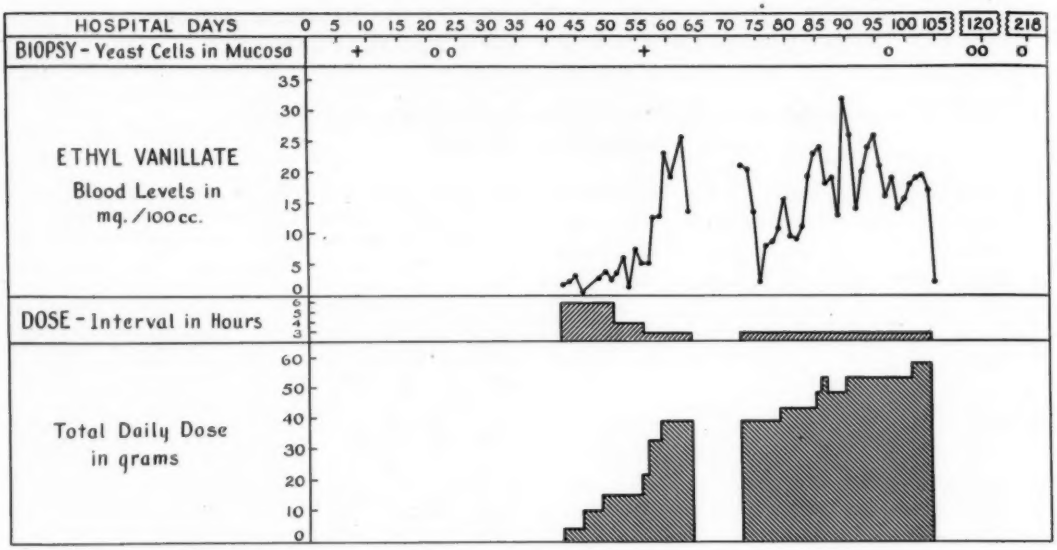
HOSPITAL DAYS
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 120 218
BIOPSY - Yeast Cells in Mucosa
ETHYL VANILLATE
Blood Levels in
mg./100 cc.
DOSE - Interval in Hours
Total Daily Dose
in grams

Fig. 2. Results of mucosal biopsies and treatment with ethyl vanillate in a patient with chronic pharyngeal and laryngeal histoplasmosis.

biopsy material was too limited to permit further staining procedures. Attempts to isolate the yeast from the biopsy material by culture and inoculation into mice and guinea pigs were unsuccessful. Radiologic examinations of the chest and the gastrointestinal tract were entirely normal. Proctoscopy was negative.

*Hospital Course and Treatment.*—Oral therapy with ethyl vanillate† was begun on April 16, 1952, using gelatin capsules containing 0.6 gm. of the drug. Satisfactory blood levels were obtained when the drug was administered every three hours. Adequate levels (20 to 30 mg./100 cc.) were obtained when the dose amounted to 4.8 to 6.6 gm. every 3 hours. It was not possible to maintain the blood concentration at a constant level (Fig. 2).

There were few side effects from the drug. Gastric and pharyngeal irritation was minimal in spite of the large dose. There was a temporary but mild reduction in the excretion of phenolsulfonphthalein. At therapeutic doses a copper-reducing substance appeared in the urine. The latter was not fermented by yeast and the blood sugar remained within normal limits. Of the liver function tests, only the thymol turbidity test became elevated (22 units) during therapy, and later it returned to normal.

The granulomatous papular lesions had almost disappeared by May 15. The mucous membranes of the hard palate remained somewhat spongy. The patient still spoke in a whisper, but was able to swallow normally and eat a general diet. Interruption of therapy from May 6 to May 15 was necessitated by temporary exhaustion of our supply of ethyl vanillate.

†Generously supplied by Dr. Harvey Blank, E. R. Squibb & Sons, New York, New York.

At the end of therapy the erythema and the granular lesions, as well as most of the gingival sponginess, had disappeared. Biopsies from the hard palate, the vocal cords and the pillars, taken on June 9, August 1 and November 6, 1952, contained chronic inflammatory granulomatous tissue without evidence of yeast cells and from which no yeast growth could be obtained by culture or mouse inoculations. The larynx was of normal dimensions and color; however, the vocal cords presented extensive scarring.

The patient was seen on follow-up examinations in August and November of 1952 and no further lesions were noted. He still had a hoarse voice. All laboratory tests were normal. The patient had been working, had gained six pounds in weight and had not experienced any febrile episodes..

## Comment

The first two cases of histoplasmosis were described by Darling[6,7,8] in 1905 and 1906. Since it was believed to be a tropical disease, histoplasmosis escaped detection elsewhere until 1926, when Watson and Riley[24] described the disease in a fifty-two-year-old woman who had spent most of her life in Minnesota and never had been in tropical or subtropical regions. As with Darling's patients, she had an irregular fever, leukopenia, hepatomegaly and an unresolving bronchopneumonia ending fatally.

Watson's report transferred the interest in histoplasmosis from the tropics to the North American continent; in 1934 Dodd and Tompkins[11]

reported the first case diagnosed *ante mortem*. The material from that case was studied culturally by deMonbreun,[9] who identified the causative agent, *H. capsulatum*, and demonstrated its life

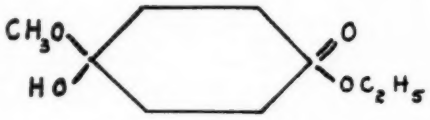


Fig. 3. Chemical structure of ethyl vanillate.

cycle as a yeast with mycelial stages. Darling had thought the organism to be protozoan.

The natural reservoirs of *H. capsulatum* are the soil,[13,17] dogs,[10] wild rats, skunks, opossums and cats. In general, animals seem to recover from the infection. A systematic survey of dogs in Minnesota for histoplasmosis has not been undertaken. To our knowledge only one dog in Minneapolis is known to have died of the disease.

Among human beings in Minnesota the incidence is relatively low. Only 4.7 per cent of 971 student nurses in a Minneapolis survey were positive histoplasmin reactors, as compared to 13.8 per cent in Detroit, Michigan, 11.8 per cent in Philadelphia, Pennsylvania, 50.2 per cent in Kansas City, Kansas, and 61.5 per cent in Kansas City, Missouri.[20] Recent extensive studies have established the Mississippi valley and the western slopes of the Appalachians as the most important areas for human infection. There the majority of children (up to 83 per cent) were found to have pulmonary calcifications, previously thought to be tuberculous. Yet less than 50 per cent of these children had a positive tuberculin skin test. After the introduction of the histoplasmin skin test, they were found to be positive histoplasmin reactors.

Until recently human histoplasmosis was thought to be always a widely disseminated and fatal infection. Present evidence indicates that this is not true. Kunstadter,[19] Bunnell and Furcolow,[1] Stuart et al,[23] Curtis and Grekin,[5] Friedman et al,[14] Furcolow[15,16] and Christie[2] have characterized the disease as usually a benign, self-limited pulmonary infection, often ending in multiple, nodular calcifications in the lung. Christie[3] and others have also described intermediate, chronic infections which, like the present case, often are localized in the pharynx and larynx.

*H. capsulatum* may invade any tissue of the body. With disseminated infections the organs are involved in the following order of frequency: lymph nodes, lungs, adrenals, gastrointestinal tract, bone marrow, skin, mouth and larynx, pancreas and kidneys.[21] The frequency of adrenal involvement is noteworthy. At autopsy the greatly enlarged adrenal glands, which for the major part consist of necrotic tissue, frequently show no parasites. Destruction of the adrenal glands has been a frequent cause of death; indeed, any case of Addison's disease of unexplained etiology should be evaluated for histoplasmosis.

Histologically, the typical lesion consists of granulomatous tissue, containing numerous macrophages and giant cells. The intracellular parasite may be missed unless the histologic sections are studied under oil immersion. From one to thirty yeast cells may be seen in a single phagocyte. They measure 1 to 3 $\mu$ in diameter and characteristically have a double refractive capsule. Although the parasite can be seen in hematoxylin-eosin stains, it is better demonstrated with Giemsa or periodic acid stains.[2]

Infection with *H. capsulatum* may be acute or chronic and may be seen in any one of the following three forms: (1) Progressive, active histoplasmosis. (2) Asymptomatic benign infection, healing spontaneously. (3) Histoplasmin sensitivity of the skin, without demonstrable lesion.

Clinical signs and symptoms may present themselves in any combination of the following: irregular fever, anorexia, nausea, anemia, leukopenia (leukopenia with splenomegaly is typical and often simulates aleukemic leukemia); pulmonary infiltrates, occasionally with cavitation; hepatomegaly, splenomegaly, generalized lymphadenopathy; ulcerations of the skin or mucous membranes, particularly the oropharynx; chronic diarrhea, simulating ulcerative colitis; and Addison's disease.

Until recently all therapeutic efforts have been unsuccessful. Within the past two years, however, ethyl vanillate (Fig. 3) has been demonstrated to be an inhibitor of the yeast *in vitro* and *in vivo*.[4,18] The ethyl ester of vanillic acid, a by-product of the manufacture of sulfite pulp, is a colorless crystalline solid with a melting point of 43 degrees C., of cinnamon-like taste, insoluble in water, but soluble in alcohol and propylene glycol, and readily miscible in oils. *In vitro* the yeast

form of *H. capsulatum* is inhibited by ethyl vanillate in concentrations of 20 mg./100 cc.

The drug is a local irritant to mucous membranes; toxic doses result in liver and kidney damage. The margin of safety is narrow. Toxic reactions make their abrupt appearance in the human being when blood levels exceed 50 mg./100 cc., and levels between 20 and 30 mg./100 cc. are desirable for successful therapy.[4] The substance is rapidly excreted in the urine and feces. In the present case blood levels varied considerably even when ethyl vanillate was given at three-hour intervals. After one single dose the blood level reached its peak in three hours, then gradually dropped off and became negligible after seven hours. Initial doses should be small and increased gradually until satisfactory blood levels are attained. Therapeutic levels will be reached in adults with a daily dose of about 0.8 gm./kg. Children require almost twice that amount.

Christie and his group[4] stated that after one week's treatment at adequate blood levels the yeast disappears from the tissues, but that longer periods of treatment may be necessary for cure of the disease. Five out of twelve severe cases of the disseminated type of histoplasmosis in their series recovered with ethyl vanillate therapy.

Local therapy of the pharyngeal lesions of histoplasmosis with propamidine has been successful in one case reported by Ellis and his associates.[12] Propamidine is a p.p'-trimethylenedioxy-dibenzamidine, a substance related to stilbamidine, and may prove to be a valuable addition to the therapeutic armamentarium against histoplasmosis. Ellis used 0.1 per cent propamidine in normal saline solution as a local spray and combined it with local applications of 100,000 U. of streptokinase and 25,000 U. of streptodornase in 10 cc. of normal saline.

## Summary and Conclusions

A patient with chronic pharyngeal and laryngeal histoplasmosis, apparently originating in northern Minnesota, was treated successfully with ethyl vanillate. A brief review of the general nature of histoplasmosis and its current treatment has been given.

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# PREMATURE SURVIVAL

## With Emphasis on the Role of the Public Health Nurse

S. S. SCHERLING, M.D.
Minneapolis, Minnesota

ALTHOUGH there has been a continuing decrease in infant mortality during the past quarter of a century, the death of newborns and of infants under one year of age is still considerable. This paper is presented in the belief that a large number of these deaths might be prevented through a well-planned program, combining the skills of the physician, nurses specially trained in care of prematures, and public health nurses.

In the state of Minnesota, with an enviable infant mortality rate of twenty-five per 1,000 live births for the year 1950, there were 1,874 deaths under one year of age. For the same year, over 110,000 infants one year or under died in the United States. Further statistical analysis reveals that from 35 per cent to 50 per cent of infant deaths are due to prematurity and in 1948 over 39,000 deaths were caused by prematurity.

Prematurity ranks first as the cause of death in the first year of life and eighth among the leading causes of death in Minnesota. There are as many deaths in the first year of life as the total for the next thirty-nine years. It is apparent that if infant mortality is to be reduced further, more intensive studies and research on the problems of prematurity will have to be undertaken.

The approach to this serious problem may be taken along two lines: first, preventing premature births; second, providing better medical and nursing care for the premature infant.

Prevention properly belongs in the hands of the obstetrician and the general practitioner. Providing better care is the concern of the physicians and nurses caring for newborns at the hospital, as well as of the public health nurse. It has been said that over two-thirds of the prematures who die could be saved with improved medical and nursing care and proper follow-up.

But first we must dispose of the question repeatedly asked, "Are prematures worth saving?"

If we were to look for the answer in the older literature, the outlook would indeed be gloomy and disheartening. Capper's stated views, based on statistics from Pirquet's Vienna clinic, are even more pessimistic than those of Ylpöe and of Brander, whose work he reviewed. Capper states in an article published in the *American Journal of Diseases of Children* in 1928: "Even more impressive (than the fact that these children have not caught up to full-term children in weight and height by puberty) are the deviations from normal in their physical and mental progress. In brief, the immature infant will become the backward school child, is the potential future psychopathic or neuropathic patient and even the potential inmate of the home for imbeciles and idiots." It is surprising that these authors would reach such conclusions in face of the known fact that such great men as Isaac Newton, Darwin, Napoleon, Voltaire, and Victor Hugo were small prematures.

Findings of recent studies are more encouraging. Moehr and Bartelme, in a well-controlled study with children from Dr. Hess's group, clearly showed that by four to five years of age no differences could be detected. The gratifying results of an analysis of 317 surviving infants ranging in weight from 605 to 1,280 grams, and in age from one to twenty-six years, was presented by Dr. Julius Hess at the meeting of the American Academy of Pediatrics in Chicago in 1950. Of 313 children whose birth weights were under 1,200 grams, the physical development of 258 was rated as "slight deviation based on expectation for age, as normal, or superior." An estimate of mental development showed 274 as normal and some superior. Only eight were subnormal and seven rated bad. Physically, four were rated as markedly subnormal and twenty-one bad. The actual number of subnormal and bad ratings was not as numerous as it appears, since those with low mental development are also included in the subnormal physical development group.

A similar study to determine what happens to the premature was undertaken by Koenig and associates at the New York Hospital, Cornell

Presented at Refresher Course for hospital and public health nurses at Center for Continuation Study, University of Minnesota, November 18, 1952, under auspices of Minnesota Department of Health.

Medical Center. These children were studied at frequent intervals over a period of two to ten years. Not only physical growth, but also speech development, locomotion, self-care, toilet training, school attainment, and social adaptation were measured. It was noted that even in the smallest weight group, average growth was attained, although it was at a later age. Most of the children were not adversely affected by prematurity.

Weighing all the evidence, the logical conclusion is that the small premature is worth saving, and that all measures taken to effect its survival are not only justifiable but mandatory.

However, all articles and surveys on the premature program agree that there is a notable lack of proper instruction given to parents of premature babies. As a result, too often the careful, meticulous, time-consuming effort expended in nursing a premature through the perilous early days in the hospital is nullified when he is discharged at 2,500 grams to an unsuitable home environment, and to parents unable and unprepared to care for so small a baby.

Many fears, misconceptions and undue anxiety of the parents can be dispelled by repeated, detailed instructions, frequent home visits, and conscientious medical supervision. The busy practitioner is too involved and has too little leisure to devote the time needed for such instruction. However, if he desires, he has within easy reach the public health nurse, who is not only able but anxious to perform these much-needed services.

While the baby is still in the hospital, the nurse makes her first visit to the home. At this visit she can instruct the parents in detail and answer many of the questions that trouble them. She surveys the household and if possible arranges for a separate room for the infant. If the house does not lend itself to such an arrangement, she manages to screen off the least used corner of the most suitable room for the baby. She can explain the need to avoid infections by eliminating visitors, frequent washing of the hands, and avoiding unnecessary or too frequent handling of the baby. The nurse advises as to procedure for airing and ventilation of the room while taking measures to protect the infant. Finally, at this visit, she inspects the siblings for evidence of infection. To be effective, this examination must be repeated just before the baby is to be released from the hospital.

Soon thereafter the nurse again makes a home visit. She reassures the family, counsels the parents regarding room temperature and clothing of the infant, and explains the danger of soft bedding. By actual demonstration she points out bathing and feeding techniques and the fundamental details of nipple care, sterilizing bottles, formula preparation, bubbling the baby, and a host of simple techniques with which the average parent is not acquainted. Finally, the trained nurse alerts the parents to observe changes that may be significant and may demand medical attention. She stresses the importance of continued, regular medical examinations, and if necessary arranges for them.

By her sympathetic approach, her sincerity, and her obvious desire to be of help, the nurse gains the confidence of the parents and becomes aware of any nettlesome family problems. With this information, and with the family consent, she is in a position to call upon existing social agencies to help the family solve their difficulties.

But in order to carry out such a program, the doctor as well as the nurse must have training in premature care and an understanding of the handicaps of the premature infant. To meet this obvious need a number of states have established special centers for prematures, under the direction of the health department. In New York City a joint training program for pediatricians and nurses was arranged through the co-operation of the State Department of Health, the U. S. Children's Bureau, and the City Department of Health. Teams of doctors and nurses were trained together, then returned to their respective hospitals to institute a well-planned, properly supervised program for premature babies. Other states have done the same through their state boards of health.

Such a training program established in this state would enhance the survival rate of premature infants. For the present, co-operation between the physician, the health department, and the public health nurse would solve many difficult family problems that parents of premature infants may encounter. Such difficulties as poor housing, tensions, and neglect of other children could be easily solved through team work and co-operative effort of the physician, the public health nurse, and established social agencies.

*(Continued on Page 262)*

# Laboratory Aids to Medical Practice

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**The Minnesota Society of Clinical Pathologists**

## CLINICAL DETERMINATION OF HEMOGLOBIN

**FRANK D. MANN, M.D.**
**Section of Clinical Pathology, Mayo Clinic**
**Rochester, Minnesota**

THE DETERMINATION of hemoglobin is one of the procedures most frequently requested of the clinical laboratory and it is also one whose results are questioned more frequently than almost any other. It would appear appropriate to inquire whether or not the procedures available for the determination of hemoglobin in the clinical laboratory are basically sound.

Virtually all clinical determinations of hemoglobin are performed by some colorimetric method. Most of these techniques involve three basic steps: (1) measurement and dilution of blood; (2) conversion of hemoglobin into some pigment suitable for optical determination and (3) determination of this pigment of hemoglobin. These steps form convenient headings under which the subject may be considered.

The principal source of error in the measurement of blood, aside from faulty performance of the mechanics of pipetting, is inaccuracy of the micropipettes that are used ordinarily. Reports have appeared which indicate that the calibrations of some such pipettes on the market were in error by as much as 30 per cent.[1] These were mainly pipettes manufactured near the end of World War II; pipettes currently available from recognized manufacturers appear to be accurate. The possibility that such inaccuracies might appear again must be borne in mind and guarded against by spot checking of calibrations.

Several different pigments of hemoglobin have been used in clinical determinations. Probably those most commonly employed have been acid hematin and oxyhemoglobin. The wide acceptance that has been accorded methods using acid hematin is difficult to understand, because it has been known since the work of Wu,[5] in 1922, that this substance is greatly affected by plasma. Hence all methods that use acid hematin are subject to large uncontrollable errors except those relatively laborious procedures based on use of washed erythrocytes. Oxyhemoglobin is highly unstable in the dilutions required for hemoglobinometry. The alterations that it undergoes do not result in changes in determined values until one half to one hour after dilution; after this, variations of the order of magnitude of 5 to 10 per cent are common.

Cyanmethemoglobin, on the other hand, is a pigment that remains entirely unchanged in spectral-absorption characteristics for twenty-four hours or more at room temperature. As shown by Sunderman, this pigment can be prepared as readily as acid hematin or oxyhemoglobin simply by dilution of blood with a solution containing 100 mg. of sodium cyanide and 300 mg. of potassium ferricyanide per liter. Because of the dread associated with anything containing cyanide, this solution has been criticized as dangerous. Actually this highly dilute solution of cyanide is less toxic than the Hayem's solution routinely employed as a diluting fluid for erythrocytes; it is just as unlikely to be inadvertently ingested in appreciable quantity. Evaluation of the extensive spectrophotometric measurements of Drabkin, together with the work of Sunderman and of Turner,[4] indicates that cyanmethemoglobin is the pigment of choice for the determination of hemoglobin; the writer has confirmed this in six years of clinical use, involving more than 750,000 determinations.

For the actual optical determination of hemoglobin, photoelectric instruments are widely used, just as they are in the majority of determinations in clinical chemistry. It may be generalized that virtually all commercially available photoelectric filter photometers and spectrophotometers are capable of yielding accurate results when they are properly used. Because the optical systems of most of these instruments permit a considerable amount of stray light, empiric calibration is

required with blood that contains known amounts of hemoglobin as determined by an independent method. Three such methods are available: (1) oxygen capacity (Van Slyke); (2) determination of iron and (3) direct spectrophotometric determination.

The third of these methods is probably the most convenient, but it requires a spectrophotometer of sufficient resolving power so that stray light is negligible. I use both the first and third methods in order to have the added security of two independent techniques. Photoelectric colorimeters and spectrophotometers often are purchased with calibrations supplied by the manufacturer. While the use of such calibrations does not necessarily lead to error, it does encourage a false sense of security on the part of any technician who may be inadequately informed about the principles of the method. Anyone competent to use these instruments should be competent to calibrate them and should do so. For anyone concerned with photoelectric photometers, the work of States[3] on the subject of stray light may be highly recommended.

In the routine operation of single-photocell colorimeters and spectrophotometers, the most common difficulty that is not covered by instructions from the manufacturer is excessive fluctuation in voltage and frequency of the alternating current used. The plain fact is that many of those instruments as supplied will not operate at all satisfactorily on the electric power available in many localities. Unless a source of highly constant current is available, either electronic voltage regulators or storage batteries are absolutely required. The latter are inconvenient and the former expensive, which may possibly explain why manufacturers of photoelectric instruments have not informed their customers that they are often required. This difficulty cannot of course be charged to the method employed in the determination of hemoglobin.

When the individual steps in the clinical determination of hemoglobin are examined, as just outlined, no basic fallacy in the method can be detected. All manipulations are simple and based on proved principles. However, it follows from the laws of biometry that any procedure, however simple, occasionally will give rise to errors far larger than the average error; these instances occupy the extremes of the statistical distribution curve. The number of determinations of hemoglobin performed in a busy clinical laboratory is so large that the laboratory will surely be damned by at least occasional errors of apparently inexcusable magnitude. Deficiencies encountered in simple articles of commercial manufacture, the products of highly refined, automatic, machine processes, provide everyday examples of the inevitability of a certain incidence of error. It is much harder adequately to control the product of the clinical laboratory, which ends up as only a number on a piece of paper, than a manufactured article. The studies of Magath, Berkson and Hurn[2] on determination of erythrocytes have illustrated methods of attack on such problems that no doubt will be applied eventually to all frequently performed procedures in the clinical laboratory. The main problem in the determination of hemoglobin is thus merged into a general one, which dominates all work in clinical laboratories and in other fields that involve large numbers of routine individual operations.

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This is the third in a series of editorial reports sponsored by the Minnesota Society of Clinical Pathologists and designed to emphasize ways in which laboratory methods may aid in the practice of medicine. Determinations of hemoglobin are performed frequently as office procedures; many different techniques are utilized and it is taken for granted that the results, which often sway important decisions in therapy, are accurate. Yet it is an easily forgotten fact that, even under the best of conditions, results of determinations of hemoglobin may vary tremendously. Therefore, the committee welcomes this report by Dr. Mann, who has had an extensive personal experience in hemoglobinometry.

As emphasized in the two preceding contributions of this series, the physician who specializes in pathology holds himself available at all times for consultation; he hopes that other physicians will feel free to seek him out for any aid he may be able to render in the advancement of medical practice. The editorial committee, consisting of Dr. Arthur H. Wells of Duluth and Drs. Arthur H. Sanford and George G. Stilwell of Rochester, solicits suggestions and comments concerning these reports. In most instances, reprints will be available and may be obtained from either the individual author or the chairman of the committee.


GEORGE G. STILWELL,
*Chairman, Editorial Committee*

*Mayo Clinic*
*Rochester, Minn.*

# President's Letter

## VIEWING FOR HEALTH

Remembering the tremendous following developed by Dr. William A. O'Brien in his many years of radio broadcasting on health matters, it is gratifying, but not surprising that the University of Minnesota became interested in developing a series of television programs along educational lines.

And, as in the case of Dr. O'Brien's broadcasts, the Minnesota State Medical Association was consulted, asked for advice and support.

The Council, in discussing the request, expressed the view that health talks can do great good for people anxious for knowledge about their own and their community's health. With this in mind, the Council assured the University of its co-operation in the initiation of health telecasts.

As a public service, WCCO-TV offered a weekly half hour on Monday mornings from 10:00 to 10:30 for a period of thirteen weeks, which began February 9. Because of this, it was possible to sponsor such a series for the entire thirteen weeks, which would have carried prohibitive costs if contemplated on a commercial basis.

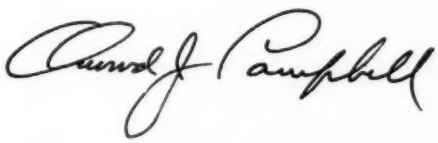
It should be noted that all programs are being supervised for scientific accuracy prior to their televising. Doctors in each field of discussion were called in to aid the producers with subject matter and its treatment. The entire series is also being supervised by the Association's Committee on Public Health Education, through its radio and television committee.

The subject material is largely of a general health nature, stressing problems commonly occurring in everyday life in the home. Personnel on the program are not doctors engaged in the private practice of medicine, and supporting personnel are being drawn from the University's school of dramatics. The staff of the University's radio station, KUOM, with the use of the time and facilities of WCCO-TV, is developing the series.

We feel that Minnesota is one of the leaders in initiating this new project. Telecasts on health matters are a relatively new departure for organized medicine. There are a few similar shows currently running in other areas of the nation, and the American Medical Association has telecasts on health subjects done by professional television writers and producers.

The series is part of the continuing program of the Committee on Public Health Education to reach the public with information on important matters of health.

With the success of this Minnesota series, it is seen that television can be a very valuable media by which medicine can further the development of a positive approach to health and medical matters.



*President, Minnesota State Medical Association*

# Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

## THE STATE ASSOCIATION CENTENNIAL

ONE HUNDRED years ago on July 23, 1853, the Minnesota State Medical Association was founded. This we know, not from our own records, but from reports which appeared in newspapers of that year. *The Minnesotan* of Saint Paul in its July 16, 1853, issue states that the medical profession of the Minnesota territory would hold a convention in Saint Paul on July 23. The July 30, 1853, issue of the *St. Anthony Express* contains an account of the meeting in the Court House of St. Paul of nine physicians of the St. Paul-St. Anthony area (two others being present by request) and the formation of the Minnesota Medical Society. A constitution was adopted and officers elected.

Meetings were held until 1857, how many and how frequently is not definitely known. It is quite certain that none was held in the period from 1857 to 1869 when on February 1 the society was revived at a meeting held in the International Hotel in St. Paul.

When the Minnesota Medical Society was launched by the handful of physicians in the St. Paul-St. Anthony area, Minnesota was still a territory. The bill organizing the Territory of Minnesota was passed by Congress on March 3, 1849. St. Paul was to be the capital and had a population of 250 to 300 persons at that time. On April 28, 1849, the first issue of the first newspaper, *The Pioneer,* made its appearance. Governor Alexander Ramsey arrived by steamboat on May 27 and, because hotel accommodations were inadequate, he and Mrs. Ramsey became the house guests of the Hon. H. H. Sibley at Mendota. It was not until 1858, when on May 11 the President approved an act of Congress, that Minnesota became a state and H. H. Sibley was declared its first governor. He had been duly elected the preceding October in anticipation of statehood. In the fall of 1859, however, Alexander Ramsey was elected governor and took office in 1860.

It seems highly desirable that the centenary of our State Association should receive appropriate recognition. Although, strictly speaking, the meeting to be held in St. Paul, May 18-20, is not the 100th annual meeting, we are, as an association 100 years old.

The centenary will be the theme of the meeting. More than the usual number of out-of-state visitors will take part in the scientific program. Sir Alexander Fleming, of penicillin fame, will speak on "Antibiotics in Heart Disease," and Dr. Richard R. Trail will speak on "X-Ray of Chest Cancer." Both are from London and will also take part in the centenary celebration of St. Joseph's Hospital on May 16.

MINNESOTA MEDICINE plans to devote its April issue to a celebration of the Association's Centenary. A number of members have consented to write on the general theme of what a century has meant in their particular spheres of medical interest. The development of medical science the past 100 years, and more especially the past fifty years has been phenomenal. The art of the practice of medicine, on the other hand, has lagged. It should be most interesting to pause for a review of this progress on the occasion of our Centenary.

## ST. JOSEPH'S HOSPITAL CENTENNIAL

THIS seems to be centennial year in Minnesota; a well-known insurance company, a bank, the Minnesota State Medical Association and St. Joseph's Hospital, all in St. Paul, will be one hundred years old this year.

It was in 1853 that the cornerstone to St. Joseph's Hospital in St. Paul was laid. In commemoration of the event, a one-day scientific session is planned for May 16, 1953, in the ballroom of the Hotel Lowry, St. Paul, Minnesota, at which time Sir Alexander Fleming, of penicillin fame, will be one of the speakers. Also, because the first successful cholecystectomy in America was done at St. Joseph's Hospital on September 24, 1886, by the late Dr. Justus Ohage,

Sr., a symposium on diseases of the gall bladder will be held during the morning sessions. All doctors are cordially invited to attend these meetings. In the evening, a banquet will be held in the Hotel St. Paul, at which time Dr. Harold Foss, President of the American College of Surgeons, and Dr. Louis H. Bauer, President of the American Medical Association, will speak. This dinner meeting will be open to the public. The full program will appear in later issues of this journal.

Our congratulations to St. Joseph's Hospital, not only for being the oldest hospital in the State, but also, for the important part it has played in the care of the sick in St. Paul. The doctors and patients owe a debt of gratitude to the Sisters of St. Joseph's, who, by their courage, charity and spirit of self-sacrifice, have so faithfully run the hospital all these years.

The people of Minnesota salute you, St. Joseph's Hospital, and extend their best wishes to you for the next one hundred years.

## PRESIDENT'S COMMISSION ON HEALTH NEEDS OF THE NATION

THE FIRST REPORT of the President's Commission appeared December 18, 1952. More volumes are to follow. The Commission was given a large order restricted to a limited period of a year, and has now announced its intention to continue in order to further clarify the results of its investigation. A mass of factual data was collected at the thirty all-day sessions in Washington and eight hearings outside of the capitol, on various phases of medical care.

Although the head of the Commission, Dr. Paul Magnuson, is a surgeon of ability and has had widespread administrative experience, numerous members of the Commission were known in advance to be socialist minded and the profession was skeptical from the start as to the conclusions which would be reached.

While the objective of the Commission, the betterment of the health of the American people, is the same as that of the medical profession, we cannot agree that the answer is for Uncle Sam to put his hands in his pockets and hand out more millions. After all, there is a limit to federal spending.

The Commission makes thirty-three recommendations for federal appropriations to be matched by equal amounts of the taxpayers' money to be supplied by the states. The program will require at least a billion of additional federal funds and another billion of state funds ($2,000,000,000 at least). Assuming this expenditure is desirable, can the national economy stand an additional 2 billions of taxation and governmental spending? This would mean further inflation and increases in cost of present medical care.

One of the Commission's proposals, that the 4.5 million beneficiaries of Social Security be provided with medical care through increase in taxes, means compulsory health insurance for this segment of the population, a policy contrary to the opinion of the Nation as expressed by thousands of organizations in the country and at the polls.

The federal government is at present spending millions of dollars in subsidizing hospital construction through the Hill-Burton Act and is showing little co-ordination by its construction of additional facilities for the Veterans Administration to care for non-service-connected cases which should be cared for in civilian hospitals. It thus furthers competition for already scarce hospital personnel between Veterans hospitals themselves and between Veterans and civilian hospitals.

The Commission further recommends the appropriation of federal funds not only for the construction and rehabilitation of medical school buildings but for the maintenance of the schools. The AMA has gone on record that acceptances of federal subsidy by medical schools, except in the form of one-time grants for construction purposes, endangers the future independence of medical training.

If the election last November meant anything, it meant a retrenchment in federal spending. We live in a critical age when our production and economy in general are being taxed to the utmost to defend our country from foreign aggression. It is no time to extend our socialistic trends. Once adopted, socialism is almost impossible to abandon.

# Medical Economics

**Edited by the Committee on Medical Economics**
**of the**
**Minnesota State Medical Association**
**George Earl, M.D., Chairman**

## AMA CRITICIZES COMMISSION REPORT

The official reaction of the Americal Medical Association toward the report of the President's Commission on the Health Needs of the Nation is seen in the January 24 issue of *The Journal of the American Medical Association*. The Board of Trustees issued a statement which summarizes its feeling about the Commission's accomplishments: "The Commission has little to offer that is new."

While the Board criticized the report, it did recognize certain difficulties under which the Commission had to work. The statement was issued with this qualification: "Comments on this report are made with the full understanding of the very wide scope of the assignment and the very limited time the Commission had to attempt to accomplish its task."

### Solution: Federal Funds?

Nevertheless, the Board of Trustees did not limit its criticism on this account. It explained:

"The Commission, by executive order, was required to submit its final report in one year. It has labored arduously and any cricitism of its final report must be made in the light of the tremendous scope of its assignment and the time limit on its activities. The Board, however, is not justified in withholding criticism on this account, since the impact of such a report, unless subjected to careful analysis, may carry undue weight in future discussions of the many important problems affecting the health of the American people."

The Board then stated its major objection to the Commission's recommendations: that the answer proposed for the solution to almost every problem is additional federal funds. And, the Board continues, "aside from the question of how these funds are to be raised, in the background of all of these endeavors lurks the shadow of federal control." Reiterating the danger of federal control further, the Board stated:

"This control may come directly or by established standards to which all states must conform. These standards will not be written into the law but will be established by administrative regulations. If the pattern laid down in former bills is followed, the administrative agency will be authorized to set up a plan of its own, in any state that does not conform to federal standards."

### Would Spiral Inflation

The fact that federal funds are recommended would only tend to spiral inflation, according to the Board of Trustees. It feels that because people are interested in higher quality medical care, and because millions are already covered by voluntary health plans, "an increase in federal expenditures leading to further taxation will give one more twist to the spiral of inflation and force a higher premium rate on those already protected." The Board comments further:

"The philosophy behind this report is barren. While it gives lip service to the responsibility of the individual for his own health, it destroys this sense of responsibility by insistence on federal aid from every angle. While it stresses the importance of a personal physician, it demeans his standing by unfavorable and false comparisons of his ability to render good medical care as contrasted to the much vaunted groups of highly trained specialists."

### Hits "All-Wise Government"

Noting that the report when first released, was devoid of factual supporting material, the Board says that the underlying philosophy is quite evident: "The argument is that health is conditioned by food, housing and education so that control of all of these factors, as well as health measures *per se*, should come under the direction of an all-wise federal government. Without naming it, the Commission has described the welfare state. It may be just as well to call it by its true name, the socialist state."

### Federal Health Services Ignored

The Board pointed out that one of the commission's duties under the president's directive was to investigate the extent of federal, state and local government services in the health field and

the desirable level of these expenditures considering private resources and other financial demands on government. However, there is little evidence in Volume I—the findings and recommendations—that the Commission has seriously considered this part of the directive under which it operated, according to the Trustees.

### Reverse Order Criticized

At the time of the appraisal of the Commission's report, only Volume I was available, and Volume I was the Commission's final conclusions and recommendations. It is interesting to note this apparent reversal of order of issuing reports of investigating groups. "The scientific and logical approach would be the presentation of factual material, analysis of the data presented, comparison of this data with other material of like nature, presentation of conclusions on the basis of facts, and finally, recommendations as to action," the Board concluded.

The Board also noted certain inconsistencies and obvious ignoring or skimming of certain facts about the nation's health. In conclusion it stated:

"The Board is fully aware that it is not in possession of all of the material that came before the Commission, and it awaits the publication of these facts, in the full report, before reaching final conclusions.

"In Volume I, brief references are noted to the tremendous advances made by American medicine, in the last half century, without benefit of any large contribution from the federal government and without federal standardization.

"The Board is therefore somewhat confused by the Commission's strong and repeated urging that the health of the American people can only be secured by widespread invasion by the federal government into almost every phase of medical activity."

## EWING TRIP CALLED OSCAR'S "DEEP BOW"

"Oscar Awards Himself an Oscar" is the interesting title of a recent editorial from the *Chicago Tribune*. The article takes a swing at Oscar Ewing's recent pre-retirement swing to far parts of the world—a trip which Ewing justified as "a personal counter-offensive against communism."

The editorial describes the trip thusly: "The departing federal security administrator commanded himself to take a deep bow over his intrepidity, unselfishness and service to the nation in making a two-month trip abroad at the expense of the taxpayers."

The *Chicago Tribune* is not the only one concerned about the value of the journey. Some members of Congress, especially Rep. Gross of Iowa, were quite skeptical about the jaunt's benefits to the nation. Rep. Gross called it "a joy ride and last fling."

### Ewing Rationalizes

According to the *Tribune* article, Mr. Ewing justified his trip as his personal counter-offensive against communism, and he said that Communists had been jeering that the United States had no social welfare programs for its citizens, and that by his personal appearances here, there, and everywhere, he was able to offset this foul libel. Comments the *Tribune*, "We are supposed to be thankful," and goes on to say, "It is a matter of staggering indifference to most Americans what the Communists say, and, in this particular matter many Americans would be just as content if the Communists were, indeed, correct in their statement that the United States has no social welfare programs."

"Mr. Ewing is as one with the Communists in thinking that there is great virtue in handouts of every sort distributed by the state. That is the New Deal outlook, which is not essentially different from the communist outlook. Both philosofies seek all power for the state and endeavor to vest the state with benevolence by operating on the theory that if everybody is taxed into poverty the state will have the necessary revenues to dole out burocratic happiness to the greatest number."

In conclusion, the paper says, "The Eisenhower administration is said to be concerned with economy and reduced taxes. A good place to start the saving would be by requiring Mr. Ewing to pay his own frate, which will run into the thousands."

## '54 HEALTH-WELFARE BUDGET ISSUED

The federal health and welfare budget proposals for fiscal 1954 have been issued recently, and they show some increases over the current fiscal spending, which ends on June 30. It should be noted, however, that these proposed figures represent the Truman administration's estimates, and they can be altered by the Eisenhower administration as seen fit.

Expenditures for the Veterans' Administration allow for 1954, a total of $774,000,000 ($691,000,000 for medical care, $83,000,000 for hospital construction), compared to a total of $763,000,000 for 1953 ($660,000,000 for medical

care and $103,000,000 for hospital construction). It is noted that hospital construction is slightly less for 1954 while medical care costs are expected to rise. The hospital construction program costs are exclusive of Hill-Burton program funds, which come under the Federal Security Agency, Public Health Service.

Total expenditures for the Federal Security Agency for fiscal 1953, ending June 30, will be $1,545,974,000. Estimates for 1953 are $1,870,785,000. These figures are divided among: public assistance, Public Health Service, the Children's Bureau, Vocational Rehabilitation and Food and Drug Administration. Under the Public Health Service is control of venereal disease, control of tuberculosis, control of communicable disease, Hill-Burton hospital program, Cancer Institute, Heart Institute, Mental Health Institute, Arthritis and Metabolic Institute, Neurology and Blindness Institute, Microbiology Institute.

Civil Defense Administration budget figures have been increased more than double to include certain funds for federal stockpiling of civil defense materials. The Atomic Energy Commission funds are increased a little over $1 million. Funds for the Bureau of Indian Affairs have been increased about $6 million, while those for the National Science Foundation remain the same.

Total increase in expenditure estimates for health and welfare matters amount to approximately $400,000,000. The total figures for health and welfare in 1953 and 1954, respectively, are: $2,279,394,000 and $2,654,855,000.

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## FEWER APPLICANTS FOR MEDICAL SCHOOLS

Continuing a three-year trend, the number of students applying for admission to the nation's medical schools declined again this year, according to the official study of 1952-53 applicants by John M. Stalnaker, director of studies for the Association of American Medical Colleges.

Results of the study, reported in the February issue of *The Journal of Medical Education*, show that some 3,150 fewer persons applied this year than in 1951-52 and some 7,600 less than three years ago.

This means that competition among the medical schools for high-ranking student applicants is increasing. Of 16,763 persons who made application last fall, 7,778 were accepted.

The survey shows that the average pre-medical student applies to three or four medical schools, so that no school can expect to have every student they select. One cautious student this year applied to forty-five medical schools and was accepted by one.

## PERIPHERAL ARTERIAL EMBOLISM

*(Continued from Page 234)*


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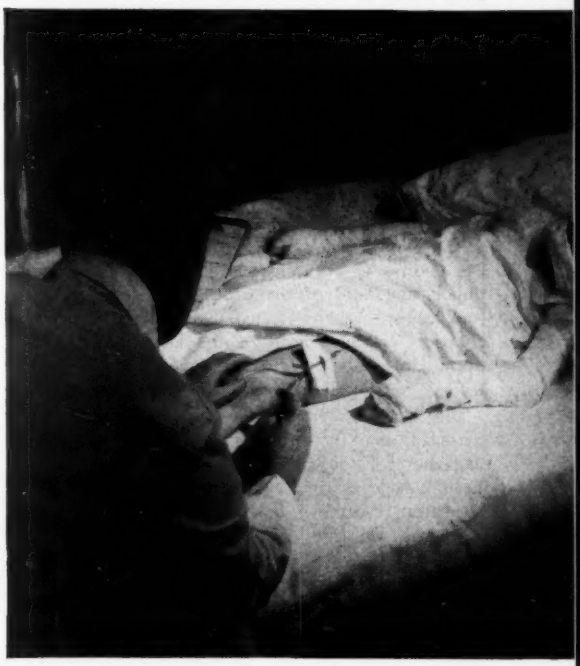
Hechter, Dopkeen and Yudell[1] have found that the use of hyaluronidase has "markedly increased the rates of absorption and administration of hypodermoclysis with no untoward reactions." They also found that extremely small amounts of this enzyme facilitated the absorption of fluids in that greater amounts of fluids were absorbed by the patient in a given period of time and that the localized swelling following hypodermoclysis disappeared more promptly.

Similar results with Alidase were recounted by Schwartzman, Henderson and King.[2] They observed "that absorption of various types of solutions, such as saline, glucose in saline, Hartmann's solution, Ringer's solution, penicillin, streptomycin, Adrenalin, and procaine was facilitated in every case."



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# ✦ Reports and Announcements ✦

## CIVIL SERVICE POSITIONS AVAILABLE TO PHYSICIANS

The United States Civil Service Commission has announced a new examination for medical officers for filling positions in various specialized fields of medicine, with salaries ranging from $5,940 to $10,800 a year. The positions are principally in the Bureau of Indian Affairs located on reservations west of the Mississippi River and in Alaska. A few positions may be filled in the Fish and Wildlife Service. Applicants must be fully qualified as doctors of medicine, and for most positions must be currently licensed to practice medicine and surgery in a State or Territory of the United States. Appropriate experience is required.

Further information and application forms may be obtained from the U. S. Civil Service Commission, Washington 25, D. C., or from most first- and second-class post offices. Applications will be accepted until further notice by the Board of U. S. Civil Service Examiners, Bureau of Indian Affairs, Department of the Interior, Washington 25, D. C.

## NATIONAL SOCIETY FOR MEDICAL RESEARCH

The seventh annual meeting of the National Society for Medical Research was held February 8, 1953, at the Palmer House in Chicago.

Dr. Anton J. Carlson, Professor Emeritus of Physiology at the University of Chicago, was re-elected President. Dr. Andrew C. Ivy, Vice President of the University of Illinois and head of the Chicago Professional Colleges (on leave) was re-elected Secretary-Treasurer. Dr. Maurice Visscher, head of the Department of Physiology, University of Minnesota, was elected Vice President.

The Society voted to give an award in the form of a certificate to Bill Davidson, staff writer for Collier's magazine, for contributions to public health and welfare through scientific articles. A film on the use of animals in medical research is now in production by the Society and will be released shortly.

## AMERICAN GOITER ASSOCIATION

The American Goiter Association meeting for 1953, will be held in the Drake Hotel, Chicago, May 7 through 9. The program for the three-day meeting will consist of papers and discussions dealing with goiter and other diseases of the thyroid gland.

## COLLEGE OF PHYSICIANS POSTGRADUATE COURSE

Course No. 4—Selected Subjects in Internal Medicine, will be held at Rochester, Minnesota, under the auspices of the Mayo Clinic and Mayo Foundation, March 23-27, 1953.

The directors are Drs. Arlie R. Barnes, W. H. Dearing, Hugh R. Butt, and Edgar V. Allen. Fees are $30 for members and $60 for non-members.

This course is planned to present selected subjects in internal medicine. The talks will include various diseases of metabolism, special talks on gastroenterology, antibiotic therapy, chest diseases, hematologic and cardiovascular disorders. Fundamental physiology as well as clinical and therapeutic aspects of these diseases will be discussed.

Registration must be made through the Executive Offices of the College, E. R. Lovaland, Executive Secretary, 4200 Pine Street, Philadelphia 4, Pennsylvania.

## SURGEONS HALL OF FAME

The International College of Surgeons, whose headquarters are housed in a limestone mansion at 1516 Lake Shore Drive, Chicago, recently purchased a mansion next door to house the Hall of Fame. Rebuilding will include the design of individual niches for busts of the great surgeons to be commemorated together with special lighting and bronze plaques detailing their contributions to human welfare.

Those to be honored will be chosen by votes of an electoral college with representatives from every part of the world. Names will be submitted to this group by national organizations or by individual surgeons.

The Board of Trustees for the Hall of Fame includes Morris Fishbein, M.D., Chicago; Henry W. Meyerding, M.D., Rochester, Minnesota; and Alexander Brunschwig, M.D., New York.

## AUTORADIOGRAPHY COURSE

An advanced course in autoradiography and three basic courses in radioisotope techniques are course offerings of interest to medical and biological personnel planned this spring and summer by the Special Training Division of the Oak Ridge Institute of Nuclear Studies.

The autoradiography course will be held from June 15-25, and basic courses of four weeks' duration will begin on June 8, July 6, and August 10.

The autoradiography course will be the second to be given at Oak Ridge, an earlier one having been given in the summer of 1951. It is intended for research level personnel using or planning to use this technique in their research.

Lectures, consultations, laboratory demonstrations and discussions will comprise the course. Leaders in the field will be on hand as lecturers and demonstration supervisors.

Subjects to be covered include both the application of the autoradiographic method and the theoretical bases of the method.

Application forms and additional information may be obtained from the Special Training Division, Oak Ridge Institute of Nuclear Studies, P.O. Box 117, Oak Ridge, Tenn.

*(Continued on Page 266)*

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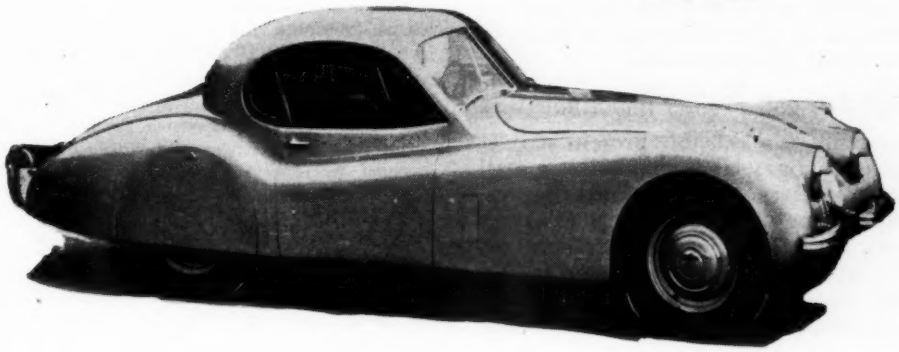

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*(Continued from Page 264)*

### SUMMER CAMP FOR DIABETIC CHILDREN

A summer camp for diabetic children will be opened for the fifth season under the auspices of The Chicago Diabetes Association, Inc., from July 21, 1953, to August 10, 1953, at Holiday Home, Lake Geneva, Wisconsin.

In addition to the regular personnel of the camp, there will be a staff of dieticians and resident physicians, trained in the care of diabetic children, furnished by The Chicago Diabetes Association.

Boys and girls, ages eight to fourteen years inclusive, will be accepted at a fee of $150.00 (which covers the three-week camping period and transportation from Chicago). Fee reductions may be arranged when considered necessary.

Physicians are requested to notify parents of diabetic children and to supply the names of children who would like to attend camp. Applications may be obtained from, and inquiries should be addressed to: Service Unit, Chicago Diabetes Association, 110 South Dearborn Street, Chicago 3, Illinois.

Limited capacity requires prompt application.

### MINNESOTA SOCIETY OF INTERNAL MEDICINE

The spring meeting of the Minnesota Society of Internal Medicine will be held in Minneapolis, Saturday, May 23. Titles and abstracts of papers for the meeting should be sent to Dr. R. S. Ylvisaker, 78 South Ninth Street, Minneapolis 2, on or before April 18.

### ASSOCIATION BACKS TV SHOW

The Minnesota State Medical Association is cooperating in the production of a 13-week series of telecasts, put on by the University of Minnesota, through its radio station, KUOM. The telecasts can be viewed on WCCO-TV every Monday morning at 10:00 and will cover various phases of general health problems.

Doctors are urged to watch the show and general comments and suggestions are invited. The entire series is under the supervision and direction of the Association's Committee on Public Health Education.

### CENTENNIAL ART AND HOBBY SHOW

By this time the entry blanks and rules and regulation sheets are distributed to all potential exhibitors in the 100th Anniversary Art and Hobby Show of the Minnesota State Medical Association, May 18, 19 and 20. If you have any photography, paintings, drawings, leather craft, wood carving, wood working—anything you have made yourself that you want to show—get your entry blanks in. Deadline for receiving the entry blanks is *April 15*. This will give time to make up a catalogue for the exhibition.

Blanks may be obtained from the Minnesota State Medical Association office, 496 Lowry Medical Arts Building, St. Paul 2, Minnesota, or from chairman James L. Benepe, M.D., 214 Lowry Medical Arts Building, St. Paul 2, Minnesota.

Please follow the rules and regulations in returning your entry blanks and in sending in your entries.

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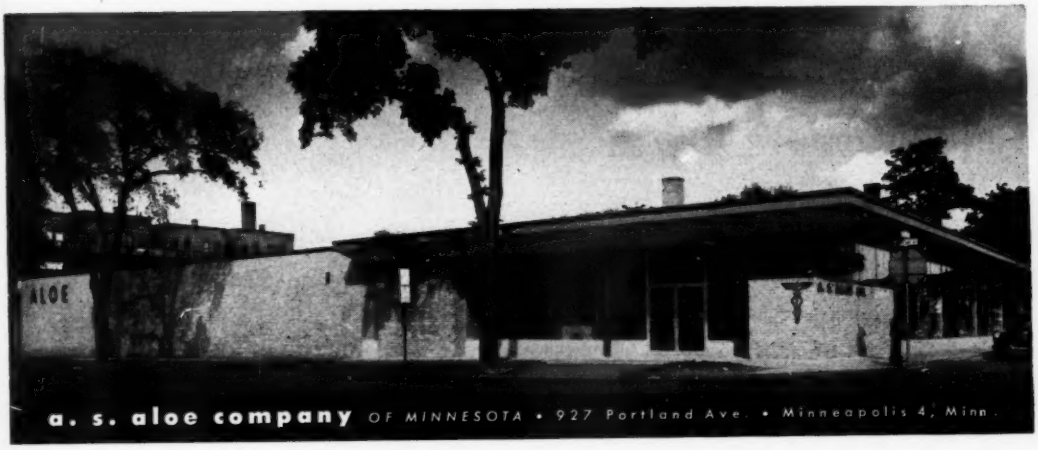


## CONTINUATION COURSES

A continuation course in *Gynecology for Specialists* in that field will be presented by the University of Minnesota on April 16 to 18, 1953. This will be the same program which was originally announced for December, 1952, but which had to be cancelled. The two and a half-day session will be held at the Center for Continuation Study on the University Campus. Subjects to be considered will include endometriosis, culdoscopy as a diagnostic tool, and gynecologic malignancy including the question of carcinoma *in situ*. The course will be presented under the direction of Dr. John L. McKelvey, Professor and Head, Department of Obstetrics and Gynecology, and the remainder of the faculty will include clinical and full-time members of the staff of the University of Minnesota Medical School.

* * *

The University of Minnesota announces a continuation course in *Gastroenterology for General Physicians* which will be held at the Center for Continuation Study from April 27 to 29. All phases of gastrointestinal disease will be covered, and emphasis will be placed on therapy throughout the course. The visiting faculty will include Dr. Chester M. Jones, Clinical Professor of Medicine, Harvard University Medical School, Boston, who will also deliver the Jackson Lecture on the evening of April 28. The course will be presented under the direction of Dr. C. J. Watson, Professor and Director, Department of Medicine, and the remainder of the faculty will include clinical and full-time members of the staff of the University of Minnesota Medical School and the Mayo Foundation.

* * *

The University of Minnesota announces a continuation course in *Surgery for General Physicians* which will be held in the Center for Continuation Study on May 7 to 9, 1952. The visiting faculty for the course will include Dr. Charles Huggins, Professor of Surgery, University of Chicago School of Medicine, who will deliver the annual E. Starr Judd Lecture on Thursday, May 7. The program will be presented under the direction of Dr. O. H. Wangensteen, Professor and Director of Surgery, and the remainder of the faculty will include clinical and full-time members of the staff of the University of Minnesota Medical School and the Mayo Foundation.

* * *

The University of Minnesota will present a continuation course in *Arthritis and Allergy for General Physicians* next May 11-13 at the Center for Continuation Study. Practical management of problems in both of these fields will be emphasized. The visiting faculty will include Dr. Walter S. Burrage, Chief of the Allergy Clinic, Massachusetts General Hospital, Boston. The course will be presented under the direction of Dr. C. J. Watson, Professor and Head, Department of Medicine, and the remainder of the faculty will include members of the clinical and full-time staffs of the University of Minnesota Medical School and the Mayo Foundation.

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## COUNTY MEDICAL SOCIETIES

President of the *Stearns-Benton Medical Society*, Dr. Joseph B. Gaida, has announced the following committee appointments for the coming year.

*Legislative:* Drs. John Beuning and Gilman Goehrs, St. Cloud; Dr. A. Zachman, Melrose, and Dr. N. F. Musachio, Foley.

*Program:* Drs. O. Phares, L. Veranth, and E. Anderson, St. Cloud, and Dr. J. C. Grant, Sauk Centre.

*Contact:* Drs. C. F. Brigham, Sr., and L. Evans, Sauk Rapids; Dr. H. Reif, St. Cloud, and Dr. L. Kuhlmann, Melrose.

*Radio:* Dr. F. Baumgartner, Albany; Dr. D. Hoehn, Holdingford; Dr. W. D. Cleaves, Sauk Centre, and Dr. T. Fleming, St. Cloud.

* * *

Officers of the *Washington County Medical Society* re-elected for another term at the January 13 meeting were Dr. Ray G. Johnson, Stillwater, president; Dr. F. M. McCarten, Stillwater, vice president; and Dr. R. E. Carlson, Stillwater, secretary-treasurer. Dr. H. T. Fasbender and Dr. N. J. Kulzer, Hastings, represented the Hastings area which is considering joining the Washington County Society.

* * *

Dr. Walter F. H. Dubbe, New Ulm, was elected president of the *Brown-Redwood-Watonwan County Medical Society*, at the annual meeting, held in January. He succeeds Dr. O. B. Fesenmaier. Other officers are Dr. Albert Fritsche, New Ulm, vice president; Dr. Carl Fritsche, New Ulm, secretary and treasurer; Dr. Rolf Hovde, Winthrop, with Dr. Earl Schroeppel, Winthrop, as alternate delegate to the Minnesota State Medical Association. Three censors elected were Dr. Howard Vogel, New Ulm; Dr. E. J. Wohlrabe, Springfield, and Dr. Adolph Dysterheft, of Gaylord.

Dr. Lyle A. French of the department of Neurosurgery of the University of Minnesota Medical School, spoke to the members on "Low Back Pain and the Intervertebral Disc."

* * *

Dr. John H. Moe, Minneapolis, was elected president of the *Hennepin County Medical Society*, February 2. He will succeed Dr. Claude J. Ehrenberg, October 1. Other officers to assume their duties at the same time are Dr. Willis L. Herbert, first vice president; Dr. Charles A. Aling, second vice president; and Dr. Conrad J. Holmberg, secretary-treasurer. Dr. Thomas J. Kinsella and Dr. Ralph H. Creighton were named to the board of directors.

* * *

Dr. Kenneth H. Peterson, of Hutchinson, was elected president of the *McLeod County Medical Society* at the annual meeting held in January. He succeeds Dr. J. D. Selmo, of Norwood. Dr. Grant Griebie, Brownton, was elected secretary-treasurer.

# Woman's Auxiliary

## CHAIRMAN NOTES AIDS FOR HEALTH DAYS

**Mrs. Lyman Clay, Chairman**

These are busy days for all auxiliary members, but possibly members could find a little time to promote a Health Day in their communities.

Where auxiliaries are very small, such projects as promoting a Health Day may seem too great a task for one or two women. But even an afternoon or evening meeting, which can be planned with the help of the P.T.A. or any local group, will result in a very worthwhile program.

Doctors in the area can be of much help with the planning as they are well acquainted with the health needs in the community or what would be of greatest interest to many.

Civilian defense needs promotion and there are many interesting movies, which may be obtained free of charge. Speakers can be obtained from state, regional, or local headquarters.

Safety in the home, on the farm and in everyday living, can be discussed. This will do much to make each individual more alert in the prevention of unnecessary accidents caused by carelessness.

The Minnesota State Department of Health has a very good film library on subjects of medical and dental health, nutrition, poliomyelitis, public health, sanitation, cleanliness and grooming, babies and children, the human body, eye health, and many others. Health and safety films create interest, and visual education is such an easy way to inform an audience on how to meet and solve many problems. There is also free literature available on many of these subjects.

County nurses are always willing to assist, and it would be a tribute to them to let them tell everyone just what a wonderful service they give in protecting the community by their program in health and prevention of diseases.

May 1 is designated as Children's Day throughout the nation. In many schools, the P.T.A. health chairmen plan a special program for all the children. They give prizes for the best posters in each grade, showing good medical and dental health habits.

This is a project that could be done by one auxiliary member alone, if she is the only auxiliary member in her community. The film library has several films that are of interest to the children. Many are cartoons and do much to help promote good health habits that mothers


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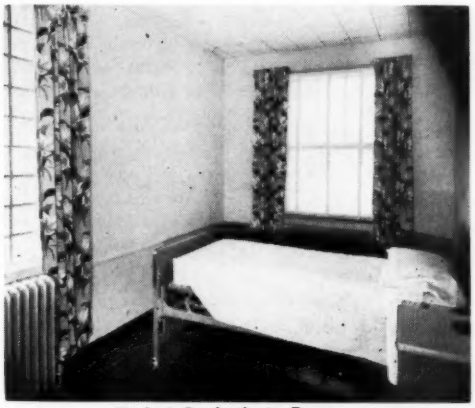

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POSTGRADUATE COURSES—1953

**SURGERY**—Intensive Course in Surgical Technic, two weeks, starting March 16, March 30, April 13
Surgical Technic, Surgical Anatomy and Clinical Surgery, four weeks, starting June 1
Surgical Anatomy and Clinical Surgery, two weeks, starting March 16, June 15
Basic Principles in General Surgery, two weeks, starting March 30
Gallbladder Surgery, ten hours, starting April 20
Surgery of Colon and Rectum, one week, starting April 13
General Surgery, one week, starting May 4
General Surgery, two weeks, starting April 20
Fractures and Traumatic Surgery, two weeks, starting June 15
**GYNECOLOGY**—Intensive Course, two weeks, starting March 16
Vaginal Approach to Pelvic Surgery, one week, starting March 30
**OBSTETRICS**—Intensive Course, two weeks, starting March 30
**PEDIATRICS**—Intensive Course, two weeks, starting April 6
Congenital Heart Disease, two weeks, starting May 18
**MEDICINE**—Intensive General Course, two weeks, starting May 4
Electrocardiography and Heart Disease, two weeks, starting March 16
Allergy, one month and six months, by appointment
**UROLOGY**—Intensive Course, two weeks, starting April 13
Ten-Day Practical Course in Cystoscopy, starting every two weeks
**DERMATOLOGY**—Intensive Course, two weeks, starting May 11

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sometimes feel they will never make their offspring realize are necessary.

The children would feel greatly honored to have the doctor, the dentist, the town policeman or fireman give them a short talk. The small fry through the teen-ager can be given something they will listen to, look at, and accept. Although much is made over Mother's Day and Father's Day, a Children's Day, even though it is a Health Day, will make them very happy.

The message above is mainly for smaller auxiliaries, but in the larger groups all-day sessions can be planned with less burden to one individual. Help may be obtained from the Minnesota State Department of Health, but they need to be contacted in advance because of the number of places that want their help.

Please remember, a small meeting in a rural community, can be just as successful in alerting interest in happy, healthy living, as in an all-day session involving several counties or a larger town.

The state chairman will help in any way she can to make it easier for anyone. Upon request, program outlines and suggestions, a catalog of health and safety films, health education material are available. The state chairman will also help locate anything needed to make a "Health Day" a success.

## RAMSEY COUNTY AIDS NURSE RECRUITMENT

Beginning February 9, and carried through the month of February, a program was presented in each of the fifteen high schools in Saint Paul to inform and interest seniors in the opportunities in the field of nursing, by the Committee on Recruitment of Student Nurses, Fourth District Minnesota Nurses Association.

This program which has been followed for the past four years has been developed with the co-operation of the Directors of Schools of Nursing and the Saint Paul Department of Education.

A panel comprising three student nurses, one of which is from a practical nurse school, one a three-year professional school, and one from a four-year degree school, with a registered nurse as a leader, which tells of the opportunities in nursing is scheduled, through the co-operation of high school principals and counsellors and directors for schools of nursing, for each school.

The Woman's Auxiliary of the Ramsey County Medical Society has done much to support this program and this year is assuming all the responsibility for transportation of panel members to and from the hospitals and the high schools.

All the schools of nursing in the city had Open House March 10, to which high school seniors interested in nursing were invited.

An increasing number of Saint Paul high school graduates are enrolling each year in schools of nursing in Saint Paul.

# In Memoriam

## WILLIAM HUNTER BARR

Dr. William H. Barr, for many years an outstanding citizen of Wells, Minnesota, died December 27, 1952.

Dr. Barr was born in Carroll, Iowa, December 28, 1879. He attended Drake University and obtained his M.D. degree from the University of Illinois in 1905. After interning at Cherokee State Hospital, Cherokee, Iowa, he opened an office in Wells in 1905.

Dr. Barr had various interests and activities. For eight years, he was a member of the State Board of Health, for twelve years a member of the State Board of Medical Examiners, and was mayor of Wells for four consecutive terms from 1911 on. For years he served as a member of the Wells School Board and was president of the Peoples State Bank.

After serving his community for forty-five years, he was tendered a banquet by the Boy Scouts, Cub Scouts, Campfire Girls and the Blue Birds.

He was a member of the Methodist Church and the Masonic, Elks and Woodmen lodges. He was also a member of the Blue Earth Valley Medical Society, the Minnesota State Medical Association and the American Medical Association.

Dr. Barr is survived by his wife, Stella; two sons, Dr. James Barr, 1st Lt. U. S. Air Force, and William H. Barr, Jr., of Wells; three daughters, Mrs. G. S. Flanagan, Emmons, Minnesota, Mrs. J. M. Anderson, Chicago, and Mrs. K. R. Thorson, Albuquerque, New Mexico.

## THEODORE H. DEDOLPH

Dr. Theodore H. Dedolph of Braham, Minnesota, died unexpectedly December 22, 1952 at Veterans Hospital, St. Cloud. He had been a patient there since 1941.

Dr. Dedolph was born in Saint Paul, March 10, 1889. He attended Mechanic Arts High School in Saint Paul and received his medical degree from the University of Minnesota in 1912. He began practice in Braham that same year as an associate of the late Dr. Charles Swenson.

In 1918, he enlisted in the Medical Corps and served a year in France during World War I. Following his discharge from service, he went to Oakes, North Dakota, but in 1922 returned to Braham, where he practiced until his retirement.

In 1922 Dr. Dedolph was married to Erica Erickson of Braham, who survives him, together with a son, Dr. Theodore Dedolph, Jr. The late Dr. Karl Dedolph of Saint Paul was a brother. Another brother, Frederick, of Fullerton, California, and a sister, Mrs. Edwin A. Hendricks, of Minneapolis, also survive.

Dr. Dedolph had been an affiliate member of the Minnesota State Medical Association since his retirement. He was a Mason and life member of the Zuhrah Temple, Minneapolis, and a member of the Legion of Honor of the Shrine.

## C. F. HOLST

Dr. C. F. Holst, a practicing physician in Little Falls, Minnesota, from 1903 to 1947, died January 12, 1953 at the age of seventy-eight.

Dr. Holst was born in Goodhue County, Minnesota, February 8, 1874. He obtained his medical degree at the University of Minnesota in 1901 and attended the Chicago Postgraduate School and the Chicago Eye and Ear Clinic in Chicago.

After practicing at Hendricks, Minnesota, from 1901 to 1903, he located at Little Falls, where he was associated with his brother, Dr. J. B. Holst.

During World War I, Dr. Holst served in the medical corps of the army.

In June, 1920, he was married to Regina Werner of Breckenridge. His wife and two daughters, Mrs. H. R. Carney of Edina and Mrs. J. W. Cullen of Cleveland, Ohio, survive him. A brother, Dr. John B. Holst of Little Falls, also survives him.

Dr. Holst was a member of the Upper Mississippi Medical Society, the Minnesota State Medical Association and the American Medical Association.

## LINWOOD D. KEYSER

Dr. Linwood D. Keyser, former fellow in pathology of the Mayo Foundation, died of chronic nephritis and rheumatic heart disease on October 12, 1952.

Dr. Keyser was born on September 26, 1893, at Victoria, Texas. He received the degree of B.A. in 1914 from the University of Virginia, of M.D. in 1918 from Johns Hopkins University, and of M.S. in Pathology in 1921 from the University of Minnesota. He was a first lieutenant in the Medical Reserve Corps of the United States Army during World War I. He was an intern at Johns Hopkins University Hospital for one year, was assistant resident surgeon at the Peter Bent Brigham Hospital, Boston, for six months, and was resident surgeon at the New York Post-Graduate Hospital for six months. He entered the Mayo Foundation as a fellow in pathology in September, 1920; his services included pathology, experimental surgery, general surgery and orthopedic surgery, following which he left the Mayo Foundation in July, 1923. He practiced general and urologic surgery at Roanoke, Virginia, where he was attending surgeon and surgical pathologist at the Roanoke Hospital and consultant surgeon to Gill Memorial and Burrell Memorial hospitals.

Dr. Keyser was certified as specialist in urology by the American Board of Urology, was a fellow of the American College of Surgeons and a member of the American Medical Association, the American Urological Association, the Johns Hopkins Surgical Society, the American Association for the Advancement of Science, the Roanoke Academy of Medicine, the Tri-State Medical Society of Virginia and the Carolinas, the Southern

Medical Association, the Southwest Virginia Medical Society, the Southeastern Surgical Congress, the American Association of Genito-Urinary Surgeons, the Alumni Association of the Mayo Foundation and Sigma Xi.

### CARL L. LARSEN

Dr. Carl L. Larsen, well known eye, ear, nose and throat specialist in Saint Paul, died suddenly of a heart attack on January 29, 1953, at his home.

Dr. Larsen was born at Menomonie, Wisconsin, April 27, 1881. He graduated from Hamline medical school in 1904 and interned at the City and County (Ancker) Hospital in Saint Paul in 1904-05. He practiced at Buffalo, Minnesota, from 1905 until 1910 and then took postgraduate work in 1910-11. Later, in 1921 and again in 1927, he took further postgraduate work in London.

He was president of the Ramsey County Medical Society in 1924, the year the American College of Physicians met in Saint Paul. He was a member of Phi Rho Sigma, undergraduate medical society, the Rotary Club, the Town and Country Club and the Athletic Club.

Dr. Larson lost his wife a few years ago. He is survived by his daughter, Mrs. Gilbert Brown, and his son, Frank E., of North Hollywood.

Dr. Larsen had an extensive practice and a host of friends. Besides being an able specialist and a member of the American College of Surgeons, he played golf until a few years ago and was a bridge enthusiast.

### JOHN SILLIMAN MACNIE

Dr. John S. Macnie, well-known specialist in eye, ear, nose and throat diseases in Minneapolis for many years, died January 30, 1953. He was seventy-eight years of age.

Dr. Macnie was born at Newburgh, New York, May 21, 1874. He received a B.A. degree at the University of North Dakota, Grand Forks, in 1893 and his M.D. degree from the College of Physicians and Surgeons at Columbia, New York, in 1896.

After taking postgraduate work in London and Vienna, he returned to Minneapolis in 1904 and joined the medical staff of the University of Minnesota. He retired as associate professor of Ophthalmology from the University staff in 1944.

Mrs. Macnie died four years ago. Dr. Macnie is survived by two sons, John P., of New York, and Robert O., of Minneapolis.

Dr. Macnie was a member of the Hennepin County Medical Society, the Minnesota State Medical Association and the American Medical Association.

### MANFORD O. OPPEGAARD

Dr. M. O. Oppegaard, an outstanding physician in the state, died January 22, 1952.

Dr. Oppegaard was a founder of the Northwestern Clinic at Crookston and as its president was largely responsible for its growth from a staff of two physicians

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and one dentist to a personnel of twelve physicians and twenty-eight lay members. The clinic was established in 1920 when Dr. Oppegaard came to Crookston.

Dr. Oppegaard was born September 8, 1885, at Taylor, Wisconsin. He obtained a B.S. degree from the University of Minnesota in 1908 and his M.D. degree in 1910. After interning at St. Luke's Hospital in Saint Paul, he took postgraduate work at the Polyclinic in Chicago, at the New York Postgraduate Hospital, and at the Massachusetts General Hospital in Boston.

Before establishing the Northwestern Clinic in 1920, he practiced in New London, Minnesota, for seven years and in Minneapolis for three years.

Dr. Oppegaard was active in medical organizations, having been president and secretary of both the Red River Valley Medical Society and the Northern Minnesota Medical Association. He was also interested in the Elks, the Shrine and the Rotary Club. From 1946 to 1952, he served as mayor of Crookston following his retirement from practice.

Surviving are his widow, a son, Manford M., of Winston-Salem, North Carolina; a daughter, Mrs. George Leichsenring of Oak Ridge, Tennessee, and two brothers, Dr. C. L. Oppegaard of Crookston and M. M. Oppegaard of Grand Forks, North Dakota. A sister, Mrs. O. E. Locken of Minneapolis, also survives him.

Dr. Oppegaard was a member of Sigma Xi and Alpha Omega Alpha scientific societies and was for many years a member of the Minnesota State Medical Association and the American Medical Association.

### JOHN E. PLUNKETT

Dr. John E. Plunkett, former fellow in medicine of the Mayo Foundation, died of cardiac insufficiency on January 11, 1953, in Ottawa, Ontario, Canada.

Dr. Plunkett was born on April 17, 1900, at Peterborough, Ontario. He received the degree of Phm.B. in 1922 from the University of Toronto and the degree of M.D., C.M. in 1930 from Queen's University, Kingston, Ontario. He was an intern at the Ottawa Civic Hospital in Ottawa in 1930 and 1931 and resident physician there in 1931 and 1932. Dr. Plunkett entered the Mayo Foundation as a fellow in medicine on July 1, 1932, and left April 1, 1935, at which time he returned to Ottawa to engage in the practice of general medicine. He was an assistant professor of clinical medicine at Queen's University and was on the staff of the Ottawa Civic Hospital until the time of his death.

Since 1945, Dr. Plunkett had been an honorary secretary of the Royal College of Physicians and Surgeons of Canada. He was an officer of the Militia Reserve of Canada and a member of the Montreal Medical-Chirurgical Association, the New York Academy of Sciences, the Ontario Medical Association, the American Heart Association and the Alumni Association of the Mayo Foundation.

# Of General Interest

Two brothers, **Dr. George R. Smith,** of Hutchinson, and **Dr. Ralph Smith,** of Minneapolis, were called to military service in January within a week of one another.

Dr. George R. Smith, a graduate of the University of Minnesota Medical School, 1946, for the past three and one-half years has been in practice in Hutchinson with **Dr. E. W. Lippmann.** Dr. Smith reported to Gunter Air Force Base, January 15, for service with the Air Force.

Dr. Ralph Smith, a graduate of the University of Minnesota Medical School, 1945, served two years with the navy after completing medical school. He did research work at the University of Minnesota until 1951, and was in charge of medicine at Ancker Hospital during 1951 to 1952. Recently he has been on the staff of the Veterans Hospital at Ft. Snelling and the University of Minnesota. Dr. Smith reported to Jamaica, New York, January 7, where he will be in charge of Naval Research at St. Albans Hospital.

**Dr. Dan W. Heubert,** Halstead, Kansas, filled the vacancy in Hutchinson left by Dr. George R. Smith. Dr. Heubert recently completed a tour of duty with the Air Force.

* * *

**Dr. I. L. Oliver,** accompanied by Mrs. Oliver, left Graceville in January for a two-month trip through several South American countries. Dr. Oliver is one of 200 members of the American College of Surgeons who attended the inter-American session of the college, held in Sao Paulo, Brazil, February 13-18.

* * *

**Dr. W. E. Hall,** of Maple Lake, has been selected as one of the civil defense directors and physicians of Wright County.

* * *

**Dr. Nelson J. Bradley,** superintendent of the Willmar State Hospital, was a guest panelist on a KSTP-TV show Sunday, January 11. Dr. Bradley and four other panel members (Rev. Forrest Richeson, of Minneapolis; James Otis, Saint Paul municipal judge, and Lynn Carroll, managing director of the Hazeldon Foundation) discussed the problems of alcoholics. The program was the first in a series of such programs and was entitled, "The Hidden Man."

* * *

A bronze plaque in memory of **Dr. O. W. Anderson,** former Luverne physician, was given to the Luverne Hospital by Alan C. McIntosh, editor and publisher of the *Rock County Star-Herald,* recently.

* * *

**Dr. Richard L. Varco,** professor of surgery at the University of Minnesota, spoke to a joint group of physicians and nurses, January 8, at the first of eight medical sessions sponsored by the Blue Earth Valley Medical Society, the Southern Dental District, Fifth District, Minnesota Nurses Association, and District two of the Minnesota Department of Health. Dr. Varco's topic for the evening was "Lung Cancer."

* * *

**Dr. Henry P. Staub** has reopened his office at 2300 Central Avenue, Minneapolis, after serving twenty-two months in the armed forces. Most of Dr. Staub's military service was in Germany.

* * *

**Dr. A. B. Hayles,** of the department of pediatrics at the Mayo Clinic, addressed the Tri-County Medical Society at an evening meeting, January 14. Dr. Hayles spoke on "Problems of Endocrinology in Childhood."

* * *

**Dr. Wallace P. Ritchie,** Saint Paul, spoke at the dedication ceremonies of the Macalester College new Winton Health Center, February 8. Dr. Ritchie is a Macalester trustee.

* * *

**Dr. Vincent Paciotti,** formerly of Perham, was released from military service, February 1, and will live in Minneapolis. Dr. Paciotti recently returned from Japan and has accepted a residency in radiology at the University of Minnesota Hospitals.

* * *

**Dr. Frank Farley,** Cincinnati, Ohio, began practice in Hibbing with the Adams Clinic in January.

* * *

**Dr. D. P. Anderson,** Austin, spoke to the members of the Austin Rotary Club at the February meeting on "What the Patient Should Know."

* * *

**Dr. McLemore Bouchelle,** formerly resident surgeon at Columbia Presbyterian Medical Center, New York, New York, joined the staff of the East Range Clinic at Virginia, January 20. Dr. Bouchelle was graduated from the Harvard Medical School in 1943. He interned at Columbia Prebyterian Medical Center in New York and then served in the army for twenty-seven months in the American and Pacific theatres.

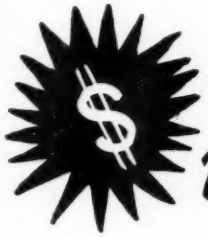
Dr. Bouchelle's appointment to the staff brings the total number of doctors at the clinic to four. The other doctors are **Dr. J. Armond Malmstrom, Dr. Paul Reed,** and **Dr. John Indihar.**

* * *

**Dr. Joseph M. Ryan,** chief of medicine at St. Joseph's Hospital, Saint Paul, took a month's course in techniques of using radioscopes at the Oak Ridge Institute of Nuclear Studies, in January.

* * *

**Dr. Don Hoganson,** of Bemidji, recently returned from medical duty with the army in Korea, presented a front line picture to members of the Headwaters Shrine Club, at the February meeting. Dr. Hoganson showed slides of pictures he took while on duty in front line action and during the Koje Island



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"Compound 76" prisoner-of-war outbreak of last summer.

* * *

**Dr. F. L. Bregel,** of St. James, has closed his office there and accepted a position with the Veterans Administration in Saint Paul. Dr. Bregel started working with the Veterans Administration, January 1.

* * *

**Dr. Frederick J. Kottke,** head of the department of physical medicine at the University of Minnesota Hospitals, directed a one-day conference on poliomyelitis at the University Center for Continuation Study, January 15. **Dr. Gaylord W. Anderson,** director of the School of Public Health at the University, outlined recent trends in immunization against poliomyelitis.

* * *

**Dr. Lewis Thomas,** professor of pediatrics and medicine at the University of Minnesota Medical School, was awarded $1,900 by the Rockefeller Foundation, January 22. The fund was awarded for study in Europe. Dr. Thomas will leave early in April for a two-month visit to laboratories in Great Britain and on the Continent where work on rheumatic fever and related problems is being carried on.

* * *

**Dr. Lewis Hanson,** of Frost, spoke on poliomyelitis at the January meeting of the Frost Parent Teachers Association.

**Dr. Lloyd C. Gilman,** of Willmar, left January 15, for Madison, Wisconsin, where he will spend a year as a surgical assistant to Dr. Arnold Jackson of the Jackson Clinic. Dr. Gilman has been in practice since 1938 when he was graduated from the University of Minnesota Medical School—he first located in Osceola, Wisconsin, then at Atwater from 1938 to 1941, until he was called into the armed forces. After four and a half years of army medical corps service, Dr. Gilman began practice in Willmar. In 1949 he became associated with the Lakeland Medical Center group of doctors which was established that year. Dr. Gilman plans to return to Willmar after one year's stay in Madison.

* * *

**Dr. C. R. Openshaw** and **Dr. N. W. McQuay** of the Mayo Foundation, recently joined the staff of the Nopeming Sanatorium where they will be affiliated for several months.

* * *

**Dr. Ivan D. Baronofsky,** associate professor of the University of Minnesota Medical School, was a guest consultant at the first of two clinical conferences for physicians of the Wright County Medical Society on cancer and heart disease at Cokato in January. These pathological conferences (the second to be held April 7) are sponsored by the Minnesota Department of Medicine of the University of Minnesota, the Minnesota Medical Association, the Minnesota Cancer Society, and the Minnesota Heart Association.

* * *

A $55,000 remodeling and construction program will begin on **Mineral Springs Sanatorium,** Cannon Falls, this year. Eight counties have participated in providing funds for the work.

* * *

**Dr. Marcel T. Mitchell** was named the new president of the Minneapolis War Memorial Blood Bank, in January. **Dr. Karl S. Klicka,** Hadlai Hull, and **Dr. R. F. McGandy** were elected vice presidents by the board of directors.

* * *

The new Heisler Clinic at 6224 Lyndale Avenue S., Richfield, was completed and opened in late January. Heading the clinic is **Dr. John J. Heisler.** Staff members include **Dr. James Arms, Dr. Alex Ratelle,** Dr. Les Nelson (dentist), and Neil Johnson (pharmacist). Plans for the building were drawn up by Dr. Heisler's brother, Robert P. Heisler.

* * *

**Dr. Harold S. Diehl,** dean of medical sciences at the University of Minnesota, took part in a panel discussion of the impact of national defense on medical education at the Forty-ninth Annual Congress on Medical Education, held in Chicago, February 8-10.

* * *

**Dr. A. B. Baker,** head of the neurology department at the University of Minnesota Medical School, addressed the second annual meeting of the Minnesota chapter of the National Mutiple Sclerosis Society, held January 21, at St. Luke's Hospital in Duluth. Dr. Baker spoke on new trends in diagnosis and treatment of multiple sclerosis.

* * *

**Dr. Leo G. Rigler,** professor of radiology at the University of Minnesota, has been named to a team of fifteen medical scientists who went to India in February to advise doctors there on the latest medical knowledge. Dr. Rigler, who previously went on a similar mission to Japan, is one of five Americans on the team. Others are Dr. Joseph C. Aub and Dr. John E. Gordon, of Harvard; Dr. Samuel Z. Levine, Cornell University, and Dr. Stuart C. Cullen, University of Iowa. The team was sent at the request of the Indian Health Ministry and jointly sponsored by the United Nations World Health Organization and the Unitarian Service Committees.

* * *

**Dr. Howard R. Hartman,** Rochester, who recently retired as senior consultant of the Mayo Clinic's clinical section, became a consulting physician to the Chrysler Corporation in January.

* * *

**Dr. Mary C. Ghostley,** director of Lake Julia Sanatorium at Puposky for twenty-three years, was honored at a surprise banquet, January 14, celebrating her retirement. Dr. Ghostley, a graduate of the University of Minnesota Medical School in 1909, established her first practice in Blackduck but soon moved to International Falls where she practiced for twenty years. "Dr. Mary," as she is known, retired because Lake Julia was closed in January. The number of tuberculosis cases has been cut to a point where the smaller institutions not equipped for some of the modern treatments of the disease, are being closed. Lake Julia Sanatorium, after thirty-six years of service to its three-county (later four) area, was the fifth of the fourteen small sanatoriums in the state to close.

* * *

**Dr. J. K. Butler,** Cloquet, was the featured speaker at the organizational meeting of the county committee of the American Heart Association held at the Northeastern Hotel at Cloquet, January 15. The fund drive for the Heart Association opened February 1.

* * *

**Dr. John Indihar,** Virginia, was in charge of preschool clinics held January 20, at Mountain Iron School, Parkville School and the West Virginia School. Mrs. Lillian Fuller, school nurse, made arrangements for the clinics.

* * *

The January issue of the *Mississippi Valley Medical Journal* (Quincy, Ill.) contains all the papers read at the recent annual meeting of the American Medical Writers' Association. There are papers by **Dr. Walter C. Alvarez,** formerly of Minnesota, and Prof. Theodore Peterson, University of Illinois, Prof. J. Linwood Cutler, University of Missouri, Dr. Harold Swanberg, Editor, *Mississippi Valley Medical Journal,* and Dr. W. W. Bauer, Editor of *Today's Health.* The first four comprise an interesting Symposium on Medical Writing conducted at the St. Louis meeting. The two winning essays in the twelfth annual essay

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contest, Mississippi Valley Medical Society, by Dr. Wallis L. Craddock, Salt Lake City, and Dr. Lawrence L. Craven, Glendale, California, are also included.

The Symposium on Medical Writing has been incorporated in a twenty-four-page reprint which will interest everyone concerned with medical writing. Free copies are available by addressing Harold Swanberg, M.D., Secretary, American Medical Writers' Association, 209-224 W. C. U. Building, Quincy, Illinois.

* * *

**Dr. and Mrs. Robert D. Thielen** and their daughters, Janet and Judith, of St. Michael, recently returned from a month's trip through Florida and a cruise to the West Indies. They sailed December 22 on the SS Nuevo Dominicano for Nassau Dominican Republic and Haiti.

* * *

**Dr. J. L. Bader,** of Slayton, attended the short course in anesthesiology at the University of Minnesota Continuation Center, in January.

* * *

Two specialists who recently joined the St. Louis Park Medical Center are **Dr. Robert L. Koller** (eye, ear, nose and throat), of Edina, and **Dr. Titus P. Bellville** (gynecology and obstetrics) of Minneapolis. Dr. Bellville replaces **Dr. Alex Barno** who was recalled to active duty with the U.S. Navy.

**Dr. R. Gordon Douglas,** Chief of the New York Lying-In Hospital, was a recent house guest of **Dr. and Mrs. William B. Stromme,** of Minneapolis.

* * *

**Dr. James Rogers Fox** of the University of Minnesota Medical School faculty, spoke on "Inside the British Health Plan," at a luncheon meeting of the Ramsey County Medical auxiliary, January 26.

* * *

**Dr. C. W. Mayo,** of Rochester, was re-appointed as a member of the University of Minnesota Board of Regents, in January. Dr. Mayo was appointed a regent of the University in February, 1951, after the resignation of Mr. A. J. Lobb, of Rochester, from the post.

* * *

**Dr. C. H. Sherman,** of Bayport, and **Dr. W. C. Bernstein,** formerly of Stillwater, joined the staff of the new Hudson Memorial Hospital, Hudson, Wisconsin, in January.

* * *

**Dr. Winchell M. Craig,** Mayo Clinic neurosurgeon and professor of neurosurgery in the Mayo Foundation, was recently elected president of the Association of Military Surgeons of the United States.

* * *

**Dr. Donald W. Hastings,** Professor and Head of the Department of Psychiatry and Neurology, University of Minnesota Medical School, attended a meeting in Paris, February 23-25, under the auspices

of The Advisory Group for Aeronautical Research and Development of the NATO. He is chairman of the Aero-Medical Panel of the United States Air Force Scientific Advisory Board and will present a paper on Psychiatric Selection of combat flying personnel.

* * *

**Dr. A. C. Aufderheide,** of Minneapolis, spoke at the Inter-Urban Academy of Medicine meeting, held January 21 at the Spalding Hotel, Duluth.

* * *

**Dr. Henry F. Helmholz,** Rochester, chairman of the national Parent Teachers Association's health committee, announced that the national Congress of Parents and Teachers is asking its local groups to promote fluoridation of community water supplies.

* * *

**Dr. George Heine,** of the Little Falls Clinic, was recalled to active duty with the Navy, in January. He reported to Coronado, California, Navy amphibious base, February 4. **Drs. G. M. A. Fortier** and **Milo Hansen** will take care of Dr. Heine's practice in his absence.

* * *

**Dr. C. F. Burnett,** of the Northwest Clinic of Crookston, was guest speaker January 30, at the Eldred Parent Teachers Association meeting. Dr. Burnett spoke on polio, its treatment and prevention.

* * *

**Dr. Robert P. Pierce,** formerly of Renville, began practice in Danube, in January.

**Dr. J. T. Saidy** left Rochester recently to begin private practice at San Mateo, California. Dr. Saidy completed his fellowship in the Mayo Foundation in January.

* * *

**Dr. O. W. Roberts,** of Owatonna, spoke on "Heart Disease" to a group in Medford, where the first of four programs in Steele County, under the auspices of the Minnesota Heart Fund, was held.

* * *

**Dr. E. V. Allen,** consultant in medicine at the Mayo Clinic, and **Dr. John Kirklin,** consultant in surgery, were featured speakers at the quarterly dinner for new fellows of the Mayo Foundation, held January 29, in Balfour Hall of the Mayo Foundation House. The evening's program included singing by the Fellows chorus directed by **Dr. Richard Sholl** accompanied by **Dr. William Parsons. Dr. Clayton Klakeg,** vice president of the Fellows Association, was master of ceremonies.

* * *

**Dr. Wallace E. Herrell,** a member of the permanent staff of the Mayo Clinic since 1938 and noted for his early work with penicillin, will leave Rochester in August to enter the section of medicine in the Lexington Clinic, Lexington, Kentucky.

Dr. Herrell began his research on penicillin in 1941, after Dr. H. W. Flory of Oxford, England, one of the first to purify penicillin for clinical use, visited the clinic. With **Dr. Luther Thompson** and **Dr. E. N. Cook,** Dr. Herrell wrote the first clinical report on the successful use of penicillin in the treatment of gonorrhea. Dr. Herrell's particular fields have been tissue regeneration, chemotherapy and experimental and clinical studies of antibiotic substances.

* * *

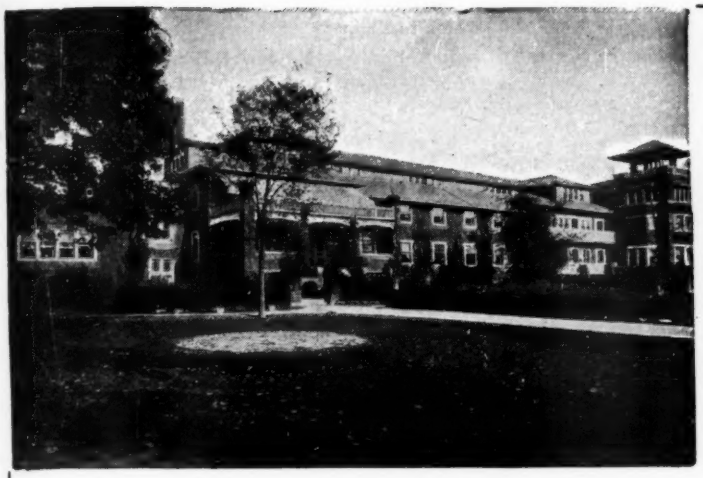
**Dr. William J. Lick** has opened an office at 244 Lowry Medical Arts Building, Saint Paul, for the practice of Internal Medicine. He is a Diplomate of The American Board of Internal Medicine.

* * *

**Richard L. Engwall,** of Winthrop, was selected as the recipient of the first Minnesota State Medical Association rural medical student scholarship. This consists of $1,000 a year for four years and in return the recipient has promised to practice medicine in a Minnesota town of 5,000 or less. The presentation of the scholarship was made by **Dr. F. J. Elias,** chairman of the Scholarship Selection Committee, to Mr. Engwall at the annual county officers meeting sponsored by the MSMA which was held at the Saint Paul Hotel, January 17, 1953. It is felt that this scholarship and additional ones planned for the near future constitute one way in which the profession of the state can take part in a positive fashion in helping to secure more physicians for rural areas.

* * *

**Dr. Ivan Baronofsky,** director of surgical postgraduate study at Ancker Hospital, Saint Paul, addressed a group of private duty nurses on thoracic surgery, February 3. The occasion was a one-day conference on nursing poliomyelitis, chest surgery



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and laryngectomy patients, held at the Lowry Medical Arts Building.

* * *

**Dr. L. E. Steiner,** of Albert Lea, spoke to the local Rotary Club, February 6, explaining functions of the American Medical Association, the state medical group and the county organizations.

* * *

**Dr. Charles M. Jessico,** Duluth, spoke on "Psychiatry from Catholic Doctors' Viewpoint," at a breakfast meeting of the Holy Name Society of Our Lady of the Rosary Catholic Parish, Sunday, February 8.

* * *

**Dr. R. H. Wilson,** of Winona, was called upon to attend Miss America (Miss Neva Jane Langley) when she became ill at Winona during the Winona Winter Carnival.

* * *

**Dr. Edward Banner,** of the Mayo Clinic, spoke to the guests at the annual father and son fellowship dinner and program of the First Methodist Church, Rochester, February 3. Dr. Banner spoke on developments in outer space travel, man-made satellites, et cetera.

* * *

**Dr. Herb L. Huffington,** of Montevideo, plans to begin practice in Waterville about April 1.

* * *

**Dr. Helen Fukashima,** instructor at Miller Hospital, Saint Paul, served as the choreographer for Bethany College's production of the operetta "The Mikado," to be given at Mankato. Dr. Fukashima, although born in Minneapolis, moved to Japan as a small girl and lived there until 1948. She was graduated from Tokyo's Women's Medical School.

* * *

**Dr. Malcolm M. Hargraves,** of the Mayo Clinic, addressed a group of farmers, businessmen and their wives attending the annual dinner meeting of the Steele County Soil Conservation District, held in Blooming Prairie in January. Dr. Hargraves talked on the rise and fall of civilizations and their relation to agriculture.

* * *

**Dr. Howard Bosland,** of Willmar, spoke at the West Central Minnesota Dental Study Club, held at the Lakeland Hotel in Willmar, February 5. Dr. Bosland's subject was "The Dentist's Health."

* * *

Poliomyelitis, wonder drugs, and the plight of the aging, were the special topics under discussion during the tenth annual Community Health Day in the Radisson Hotel, February 6. Speakers and panel members from the medical profession included **Dr. Gaylord Anderson,** Director of the University of Minnesota School of Public Health; **Dr. Wesley Spink,** professor of medicine at the University of Minnesota, and **Dr. Reynold A. Jensen,** Hopkins.

The women's auxiliaries to the Hennepin County Medical and Minneapolis District Dental Societies sponsored the event.

**Dr. Leonard B. Moyer,** formerly of Lake Preston, South Dakota, began practice with **Dr. G. F. Engstrom** in Belgrade Community Hospital, in February. Dr. Moyer has served for four years as surgeon with the United States Public Health Service and two years with the Army Medical Corp.

* * *

**Dr. George E. Williams,** of the Rochester-Olmsted County public health center, showed and discussed the film, "Fears of Children," at a meeting of the Northrop Mother's Club of Rochester.

* * *

**Dr. Hamline Mattson,** Minneapolis, officiated as president of the Minneapolis Surgical Society at the thirty-first annual Founders' Day banquet at the Minneapolis Club, February 4. Guest speaker was Dr. Karl Myer, chairman of the division of surgery at Cook County Hospital, Chicago.

* * *

**Dr. Arthur C. Kerkhof,** and **Dr. Carleton B. Chapman,** associate professors of medicine at the University of Minnesota, spoke at a Blue Earth Valley Medical Society Seminar group, February 6. This was the fourth seminar session; the seminars are sponsored by the Blue Earth Valley Medical Society, Southern Dental District, Minnesota Nurses Association, District 5, and the Minnesota Department of Health, District 2.

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**Dr. Victor Johnson,** director of the Mayo Foundation, participated in the program of the forty-ninth annual Congress on Medical Education and Licensure, held in Chicago, February 8 to 10.

* * *

**The Dr. George J. Tweedy Memorial Fund,** established by friends and the family of the physician following his death July 20, 1952, has been used to purchase equipment for Winona General Hospital. Dr. Tweedy spent fifty-nine years in medical practice in the Winona vicinity. His two sons, **Dr. Robert Tweedy** and **Dr. John Tweedy,** have offices in the city and are members of the medical staff of the hospital.

* * *

**Dr. Louis A. Buie,** of Rochester, senior consultant in the Section of Proctology of the Mayo Clinic, has been asked to serve as a member of the National Foundation for Infantile Paralysis, Inc. The term runs from January 1, 1953, to December 31, 1955. Dr. Buie has been a member of the Committee on Professional Education and Publications of the national poliomyelitis group.

* * *

**Dr. C. W. Moberg,** of Detroit Lakes, attended a two-week postgraduate course in surgery, in February, held at the Cook County Hospital, Chicago.

* * *

**Dr. Charles W. Mayo** and **Dr. Raymond J. Jackman,** of the Mayo Clinic, participated in the first inter-American session of the American College of Surgeons, held February 9-12, at Sao Paulo, Brazil.

* * *

**Dr. P. J. Schneider,** of Adams, held open house in his new office building, in February.

* * *

**Dr. S. G. Knight,** of Randall, although officially retired three years ago after forty years of practice in the community, still carries on a limited practice from a small office in his home. The eighty-three-year-old doctor came to Randall in 1910 from Ontario, Canada. Dr. Knight was a classmate of Dr. Allan R. DaFoe of Callander, Ontario—the doctor who delivered the Dionne quintuplets of Canada—and has quadruplets in his own family. The Hargreave quadruplets of Canada were born to a grandniece of Dr. Knight.

* * *

Two new doctors, **Dr. J. Roger Nickerson,** Heron Lake, and **Dr. Neil Nickerson,** Thief River Falls, joined **Dr. R. C. Hunt** and **Dr. Robert S. Hunt** in their practice in the Fairmont Clinic, in late February.

* * *

**Dr. D. R. Philp,** of Windom, was entertained at a farewell dinner given by the nursing staff of the Windom Hospital, February 9. Dr. Philp left in February for a tour of active duty with the armed forces. Among community members attending the dinner were **Dr. H. P. Basinger,** Windom, and **Dr. Robert Sawtell,** of Jeffers.

**Dr. Percy T. Watson,** Minnesota Department of Health, has retired after serving the people of this state for seventeen years. The preceding twenty-seven years Dr. Watson spent doing public health work in China. One of his outstanding achievements during his missionary physician work was the organization of expeditions to stop recurrent epidemics of bubonic and pneumonic plague.

Dr. Watson returned to the United States in 1934 and a year later he joined the health department. He received his medical degree from Johns Hopkins in 1907 and his M.P.H. from Harvard. Dr. Watson did postgraduate work at the Mayo Clinic. Two of his children are physicians—Dr. R. Janet Watson, of Brooklyn, New York, and **Dr. Theodore Watson,** of Saint Paul.

* * *

**Dr. Henry E. Michelson,** of Minneapolis, delivered two professorial lectures before the New York University Postgraduate Medical School in New York, January 29 and 30. The subjects of the lectures were the Lupus Erythematosus Problem and the Pathogenesis of Sarcoidosis.

* * *

**Dr. Merrill D. Chesler,** of Minneapolis, was the principal speaker at the meeting of the Renville County Medical Society, held at Olivia, February 17. The title of his talk was "The Use of Skin Grafts and Flaps."

## HOSPITAL NEWS

Dr. V. D. Thysell of Hawley, was elected president of the medical staff of **St. Ansgar Hospital** at Moorhead, at the annual meeting in January. Dr. E. W. Humphrey, Jr., Moorhead, was elected vice president, and Dr. Carl Simonson, re-elected secretary. Dr. James Oliver was the retiring president. Four doctors were cited for attendance records at the monthly meetings, including Dr. Simonson, Dr. H. G. Rice, Dr. Thysell, and Dr. Oliver.

* * *

Dr. Leonard A. Lang has been elected chief of staff at **St. Mary's Hospital,** Minneapolis, succeeding Dr. Leo Culligan. Dr. Horatio Sweetser was elected vice president and Dr. James Trow, secretary-treasurer. The medical advisory committee includes the officers and Dr. T. J. Kinsella, Dr. Maurice McInerny, and Dr. Willard D. White.

* * *

Dr. Olga S. Hansen Litzenberg, Minneapolis, was elected chief of staff of **Eitel Hospital,** Minneapolis, at the annual meeting in January. Dr. G. T. Schimelpfenig was elected assistant chief of staff, and Dr. O. L. Zahrendt, secretary-treasurer. Honorary life memberships to the staff were presented to Drs. S. Marx White, William H. Condit, Arthur C. Strachauer, Alfred T. Baker, Hugh J. Tunstead, and Henry L. Ulrich.

* * *

Dr. Kenneth W. Teich was elected chief of staff at **Miller Memorial Hospital,** Duluth, at the annual


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| 30 days of Nurse at Home | 5.00 per day | 10.00 per day | 15.00 per day | 20.00 per day |
| Laboratory Fees in Hospital | 5.00 | 10.00 | 15.00 | 20.00 |
| Operating Room in Hospital | 10.00 | 20.00 | 30.00 | 40.00 |
| Anesthetic in Hospital | 10.00 | 20.00 | 30.00 | 40.00 |
| X-Ray in Hospital | 10.00 | 20.00 | 30.00 | 40.00 |
| Medicines in Hospital | 10.00 | 20.00 | 30.00 | 40.00 |
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meeting held in January. Dr. A. C. Kelly was chosen vice chief; Dr. William A. Klein, secretary-treasurer, and Dr. Fred Baker, Dr. H. J. Jeronimus and Dr. Mario Fischer (ex officio member), the executive committee. Dr. Elmer Rusten, Minneapolis, entertained the group with a talk on big game hunting in Africa.

* * *

Dr. Cyril M. Smith, Duluth, was named chief-of-staff-elect of **St. Luke's Hospital,** Duluth, at the annual meeting held in January. Dr. Archie Olson is the present chief and Dr. S. H. Boyer, Jr., the retiring chief. Dr. Ralph Eckman was elected staff secretary. Dr. Stuart C. Cullen, professor of anesthesiology at the University of Iowa, was the guest speaker for the evening.

**BLUE CROSS-BLUE SHIELD**

In a recent analysis of Blue Shield claims, it was found that twelve claims paid by Blue Shield were covered under the Workmen's Compensation laws and consequently were not eligible for Blue Shield benefits. It was apparent from the review that Blue Shield had paid these claims because the space on the Medical Service Report requesting information on Workmen's Compensation coverage had not been marked properly. Other reviews have shown similar problems arising from improper or inaccurate reporting to questions on the Blue Shield claim blank. Principally the difficulties concern the failure to include the patient's birth date, the dates services were rendered, the charges made for the services, the appropriate annual income date, the signature of the attending doctor, and the date the condition for which care was rendered first existed or was known to exist. Omission of information such as listed in the foregoing statement creates additional administrative costs and also delays the action and payment of a claim over a longer period of time than is necessary.

The Medical Service Report form or claim blank which is furnished by Minnesota Blue Shield is worded in such a manner as to reduce to a minimum the time and effort required for its proper completion. Most of the items on the form merely require a check mark, while the remainder needs only a few words or figures. Constant study is being made for new ways to simplify and improve this claim form for the convenience of the profession and the subscriber.

The birth date of the patient, as previously stated, is frequently omitted by both doctor and subscriber, but it is of extreme importance in the correct processing of Blue Shield claims. For example, it is not possible to pay some claims such as those for hernia unless the age of the patient is known, due to the fact that operations for hernias carry a smaller fee for children under ten years of age. Conversely, for tendon repairs in children under five years of age, the payments are double those for persons of more advanced years. Other considerations such as the validity of a dependent's contract are related to the subscriber's birth date.

Annual income of the subscriber influences the amount and method of payment of a claim. The exact amount of the annual income is not required. It is only necessary to ask the patient if his income is above or below the Blue Shield service benefit income level, and check the appropriate space on the Medical Service Report. After the payment of claims, letters are often received from subscribers inquiring why an additional bill was sent to them by the doctor when they were entitled to the benefits of unlimited subscribers. Review of the files in such cases invariably indicated that there has been a failure to check the income level.

A substantial number of incorrect payments are caused by inaccuracies and incompleteness in that portion of the Medical Service Report set aside for stating the services rendered. For instance, when a gall bladder is removed with exploration of the common duct, the Medical Service Report most frequently contains only the fact that the operation was a cholecystectomy. The result is that $125 is paid whereas $150 should have been paid. Or, when a hysterectomy is performed, it is essential that Blue Shield be informed whether the surgery was a total or only a sub-total hysterectomy since the Schedule carries a different fee for each. Similarly with all services, complete description is necessary for proper payment, and the dates the services were rendered as well as the doctor's charges help in paying claims properly.

Finally, it is necessary that the doctor's name and

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address as well as his signature be furnished at the bottom of the medical report. Legal considerations prevent the processing of claims before these are on file, and of course it is difficult to prepare and send checks without the correct spelling of the doctor's name and address. Therefore, if the persons in the doctor's office who prepare the report would type or print this information in addition to having the physician affix his signature, prompt payment of the claim would follow.

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## BOOK REVIEWS

**Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.**

OFFICE MANAGEMENT OF OCULAR DISEASES. William F. Hughes, Jr., M.D., Professor and Head, Department of Ophthalmology, University of Illinois College of Medicine, Ophthalmologist in Chief, Illinois Eye and Ear Infirmary, and Attending Ophthalmologist, Presbyterian Hospital, Chicago. 452 pages. Illus. Price $9.00, cloth. Chicago: Year Book Publishers, 1953.

PRACTICE OF PSYCHIATRY. William S. Sadler, M.D., F.A.P.A., Consulting Psychiatrist to Columbus Hospital and Pinel Sanitarium; Fellow of the American Psychiatric Association; member of American Psychopathological Association. 1183 pages. Price $15.00, cloth. St. Louis: C. V. Mosby Co., 1953.

CLINICAL ALLERGY. French K. Hansel, M.D., M.S., Director Hansel Foundation for Education and Research in Allergy; Chief of Allergy Service, DePaul Hospital, St. Louis. 1005 pages. Illus. Price $17.50, cloth. St. Louis: C. V. Mosby Co., 1953.

BACK DOWN THE RIDGE. W. L. White. Author of "They Were Expendable" and many other books. 182 pages. Price $3.00, cloth. New York: Harcourt, Brace & Company, 1953.

CHLOROPHYLL IN MEDICINE. Scientific background, clinical experience in topical therapy, with Chloresium ointment and solution. 52 pages. Illus. Paper cover. Supplied without charge on request. Mt. Vernon, New York: Rystan Company, 1952.

THE STORY OF THE ADAPTATION SYNDROME (Told in the Form of Informal, Illustrated Lectures) By Hans Selye, M.D., Ph.D. (Prague), D.Sc. (McGill), FRS. (Canada), Professor and Director of the Institut de Medecine et de Chirurgie Experimentales Universite de Montreal. 225 pages. Illus. Price, $4.50. Montreal: Acta, Inc., 1952.

As physicians and medical students read and heard about Selye's Adaptation Syndrome, they were interested in knowing about his experiments and what led him to perform them. This book consists of a series of lectures given by Selye in response to this interest.

There are seven lectures in all. The first five lectures contain a chronological account of how the stress concept evolved and how one experiment led to another. The account includes a descriptive characterization of the general adaptation syndrome, the dynamics of it, the diseases of adaptation (i.e., the results of the imperfect functioning of this defense reaction), and the

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many variations involved. The sixth lecture is an enumeration both of the principal facts gained from all the research on stress and the adaptation syndrome and of the criticisms directed against the theory. The last lecture is a general summary of the adaptation syndrome concept and a look at some of the questions yet to be answered.

Because this is an informal, personal story, the author has felt free to intersperse his account with bits of his philosophy of research and with admonitions and exhortations to other researchers. It gives glimpses into Selye's enthusiasms, his disappointments, and his triumphs as this concept evolved.

M.M.P.

HISTOPATHOLOGICAL TECHNIC, Including a Discussion of Botanical Microtechnic. By Aram A. Krajian, Sc.D., formerly in Department of Pathology, Los Angeles County General Hospital, Los Angeles, Calif., and R. B. H. Gradwohl, M.D., Pathologist to Christian Hospital; Director, Gradwohl School of Laboratory and X-Ray Technique, St. Louis, Mo. 2d ed. 362 pages. Illus. Price, $6.75. St. Louis: C. V. Mosby Co., 1952.

This is the second edition of Krajian's *Histological Technic*, first published in 1940. Like the first, the current edition presents an excellent exposition of standard staining techniques, as well as Dr. Krajian's own methods of staining reticulum, elastic fibers, amyloid, myelin sheaths, bacteria, treponema pallida, et cetera. Dr. Gradwohl's most notable contribution is a section on Papanicolaou's method for the cytological diagnosis of malignancy. The sections on the dopa reaction and the demonstration of spirochaetes in tissues are also noteworthy.

On the whole, this book is a clearly written, understandable, and up-to-date laboratory manual for the histologist. It is reasonably complete, but there are a few surprising omissions, for a book published in 1952. For instance, there is no mention of the newer methods for staining mucopolysaccharides, such as the various modifications of the leukofuchsin-periodate reaction. The use of toluidine blue is mentioned only in connection with the demonstration of Nissl granules.

This volume is an excellent example of its type—namely, a laboratory manual of histopathologic techniques. It shares the limitations of almost all such manuals, however, in that it is concerned almost exclusively with the *how*, and the *why* is almost completely ignored. In this volume, for example, there is only one short paragraph on the theory of staining, while no less than twenty-six pages are devoted to the use and care of microtome knives. This "cook book" approach makes the book of more interest to laboratory technicians than to physicians.

ROBERT W. GOLTZ, M.D.

DERMATOLOGY; ESSENTIALS OF DIAGNOSIS AND TREATMENT. By Marion B. Sulzberger, M.D., Professor and Chairman, Department of Dermatology and Syphilology, New York University Post-Graduate Medical School; Director of Dermatology and Syphilology, Skin and Cancer Unit and University Hospital, New York University-Bellevue Medical Center; and Jack Wolf, M.D., Associate Professor of Clinical Dermatology and Syphilology, New York University Post-Graduate Medical School; Attending Dermatologist and Syphilologist, Skin and Cancer Unit and University Hospital, New York University-Bellevue Medical Center. 592 pages. Illus. Price, $10.00. Chicago: The Year Book Publishers, ©1952.

The authors have completely revised their text "Dermatologic Therapy" and changed the title to "Dermatology: Essentials of Diagnosis and Treatment." The authors state that their book is intended for the medical student, the graduate student in dermatology and the practicing nondermatologist. This book will be of value to the dermatologist, as well. It stresses the diagnosis and management of certain common and selected groups of dermatoses that are seen daily by the general practitioner as well as by the dermatologist.

The book is well organized, well illustrated and outlines practical steps in diagnosis and treatment. It includes the most recent information on the dermatologic uses of antibiotics, ACTH and cortisone. Two chapters are devoted to the diagnosis, course and management of the different stages of syphilis. This is a very worthwhile book for those who are dealing with the management of skin diseases.

HAROLD G. RAVITS, M.D.

## DIAGNOSIS OF CONGENITAL CARDIAC DEFECTS IN GENERAL PRACTICE

A new handbook, "Diagnosis of Congenital Cardiac Defects in General Practice," is being distributed by the American Heart Association and its affiliates. This handbook, designed for general practitioners and pediatricians, is intended to clarify the function of the family physician in the diagnosis of congenital cardiac defects and in the management of patients with these defects.

Written by Regina Gluck, M.D., Assistant Clinical Professor of Pediatrics, Children's Medical Service, Bellevue Hospital, New York City, the booklet points out the need for caution in advising on cardiac surgery before a definite diagnosis is made by a specialist. It suggests the advisability of selecting cases for referral to a cardiologist, and outlines the contribution to diagnosis and treatment that can be made by medical-surgical teams in special institutions.

The booklet may be obtained from affiliated heart associations or from the American Heart Association at 44 East 23rd Street, New York 10, N. Y.

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